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Research Product 85-02

BASIC RIFLE MARKSMANSHIP  
SHOOTER'S BOOK

ARI Field Unit at Fort Benning, Georgia  
Training Research Laboratory

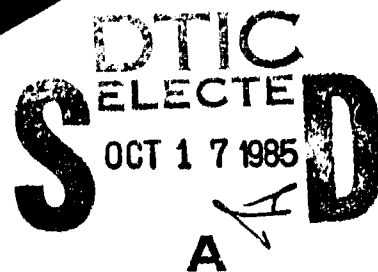
January 1985

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20. ABSTRACT (Continue on reverse side if necessary and identify by block number) The Shooter's Book is designed with two purposes in mind. It gives the Initial Entry (IE) soldier a reference to read and study if he has questions concerning any portion of Basic Rifle Marksmanship (BRM) training. Second, each IE soldier has the opportunity to keep track of how well he is doing by use of the performance record section located at the end of this book. By using the performance record, each soldier will have a good picture of his shooting ability. If he begins to have trouble, his sergeant, → (Continued)			

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20. (Continued)

For other training personnel, can look at this shooter's book in an attempt to analyze and make necessary corrections to this problem. Did the soldier incorrectly change his sights? Did he fail to change his sights? Is he having trouble hitting distant targets? Questions such as these can be answered if a soldier keeps neat and accurate records. The shooter's book as fielded, is pocket-sized (3-7/8" by 5"); this research product is a 220% enlargement of the actual shooter's book. Keywords: → (to p 2)

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Research Product 85-02

## **BASIC RIFLE MARKSMANSHIP SHOOTER'S BOOK**

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**and**  
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**Approved as technically adequate  
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**Office, Deputy Chief of Staff for Personnel**  
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**January 1985**

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## FOREWORD

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The Basic Rifle Marksmanship Training Program is a core element of US Army training for all soldiers. It not only trains good shooting skills, but serves to instill the confidence of the soldiers in the basic weapon each may have to use. The Basic Rifle Marksmanship Shooter's Book gives the soldier an introduction to the marksmanship program and a means of recording performance during critical phases of field instruction. Its size allows the soldier to carry it easily and to have it available for personal reference or for comment by instructors.

EDGAR M. JOHNSON  
Technical Director

## BASIC RIFLE MARKSMANSHIP SHOOTER'S BOOK

### EXECUTIVE SUMMARY

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#### Requirement:

As part of the ARI program development in basic rifle marksmanship, it was thought that a compact reference guide, similar to one common to the US Marine Corps, would enhance training. The 3 7/8" by 5" format would permit soldiers to carry the basic information about the M16A1 rifle as well as a record of their performances during range firing. (The book has been enlarged to 220% for easier reading in this research product.)

#### Procedure:

The product was developed from tested training program material and included sufficient reproductions of targets used during training to permit the soldier to record training progress. The book was field tested at a number of training centers and revised using soldier and instructor comments.

#### Findings:

The shooter's book has been fielded informally to permit local trainers to adapt its contents to unique conditions at any given training site. Request for permission to reproduce it suggests general acceptance in its present format.

#### Utilization of Findings:

The Basic Rifle Marksmanship Shooter's Book is in wide distribution, supported by Army Training Centers which use it as part of their marksmanship training programs.

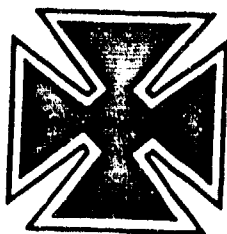
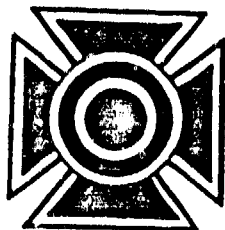
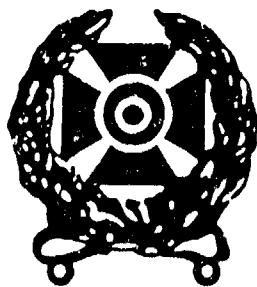


# BASIC RIFLE MARKSMANSHIP SHOOTER'S BOOK

## CONTENTS

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	Page
INTRODUCTION . . . . .	1
THE M16A1 RIFLE . . . . .	2
THE FOUR FUNDAMENTALS OF RIFLE MARKSMANSHIP . . . . .	10
FIRING POSITIONS . . . . .	13
HOW TO ZERO YOUR M16A1 RIFLE . . . . .	17
THE EFFECTS OF WIND AND GRAVITY . . . . .	21
BASIC RIFLE MARKSMANSHIP TRAINING . . . . .	32
HOW TO USE THE PERFORMANCE RECORD . . . . .	38



# **BASIC RIFLE MARKSMANSHIP SHOOTER'S BOOK**

The original of this book is 3 7/8" wide by 5" high and is bound along the top edge. The book has been enlarged to 220% of its original size for easier reading in this report.

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### Preface

The Shooter's Book is designed with two purposes in mind. It gives the initial Entry (IE) soldier a reference to read and study if he has questions concerning any portion of Basic Rifle Marksmanship (BRM) training. Second, each IE soldier has the opportunity to keep track of how well he is doing by use of the performance record section located at the end of the book. By using the performance record, each soldier will have a good picture of his shooting ability. If he begins to have trouble, his sergeant, or other training personnel, can look at this shooter's book in an attempt to analyze and make necessary corrections to the problem. Did the soldier incorrectly change his sights? Did he fail to change his sights? Is he having trouble hitting distant targets? Questions such as these can be answered if a soldier keeps neat and accurate records. If you have any comments on questions, contact:

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## Introduction

The purpose of the Shooter's Book is to give you a better understanding of your M16A1 rifle and Basic Rifle Marksmanship (BRM). This book contains important information you must know to become an expert rifleman. A records section is included for keeping track of how you are shooting. If you are not shooting as well as you thought you could or if you want to improve your shooting skills even further, your sergeant or other training personnel can look at your shooter's book and give you tips on how to bring out the expert in you. Therefore, it is most important that you keep accurate and neat records. Remember, if you want to become an expert rifleman carry this book to each period of BRM training, study it, keep good records, and don't be afraid to ask for help.

### The M16A1 Rifle

The M16A1 rifle is a 5.56-millimeter (mm), magazine-fed, gas-operated, air-cooled, shoulder weapon. It can be fired in either semiautomatic (one bullet per trigger pull) or automatic mode (13 bullets per second) through the use of a selector lever. The M16 is light and easy to carry. It has little recoil (kick). It is accurate out to ranges beyond 300 meters and has high killing power at ranges out to 500 meters. The M16 was designed so that field stripping (taking it apart for cleaning) can be done quickly.

Get to know your rifle. In combat your M16 may be your best friend. If you take care of it your M16 might save your life. Figures 1 and 2 on pages 3 and 4 show where all the important parts of the M16A1 rifle are located. Study and know what each part is and where they are. Being an expert marksman not only means shooting well but also knowing all about your rifle.

# MIGAL RIFLE - EXTERIOR PARTS

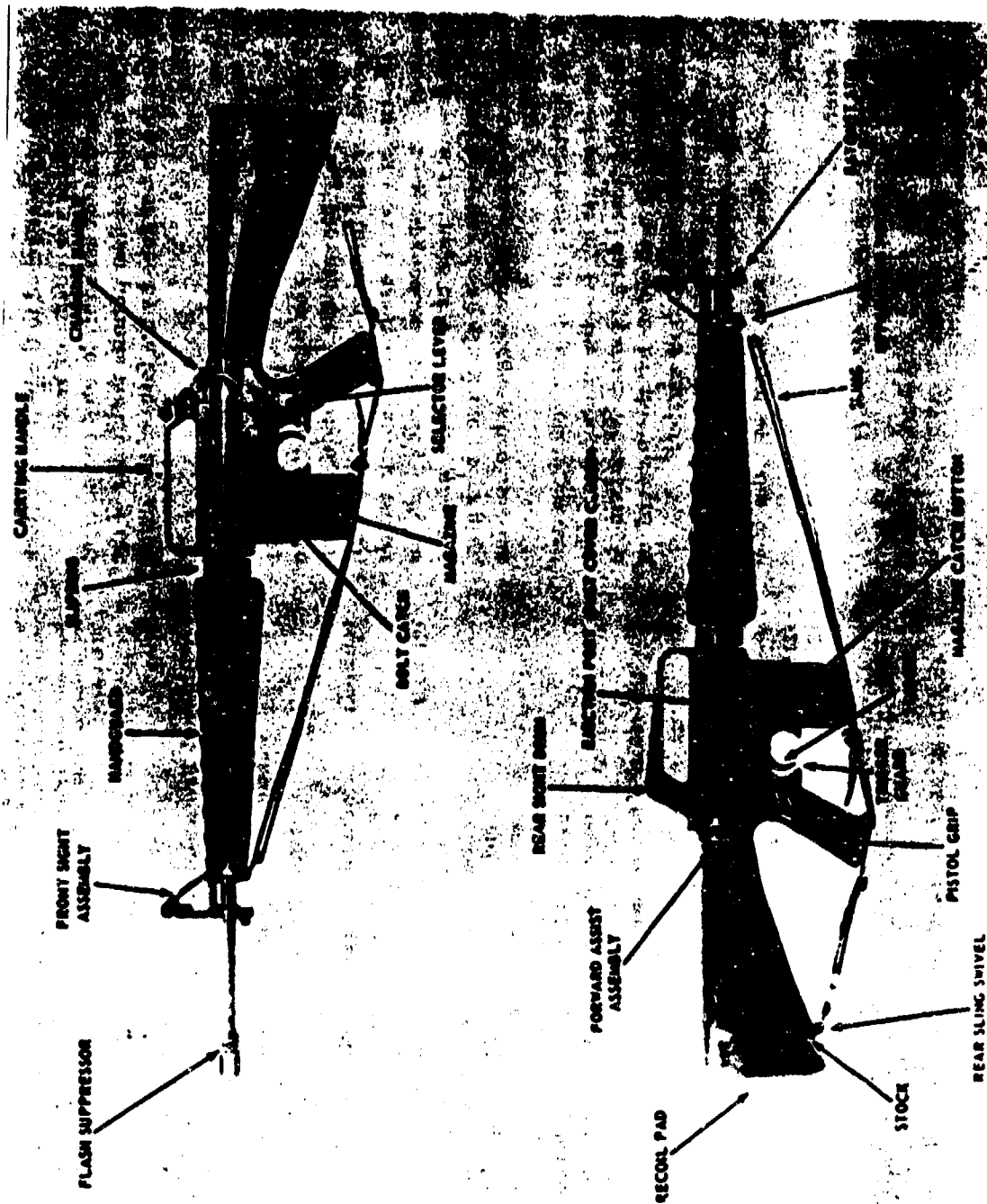


Figure 1

# M16A1 RIFLE - INTERIOR PARTS

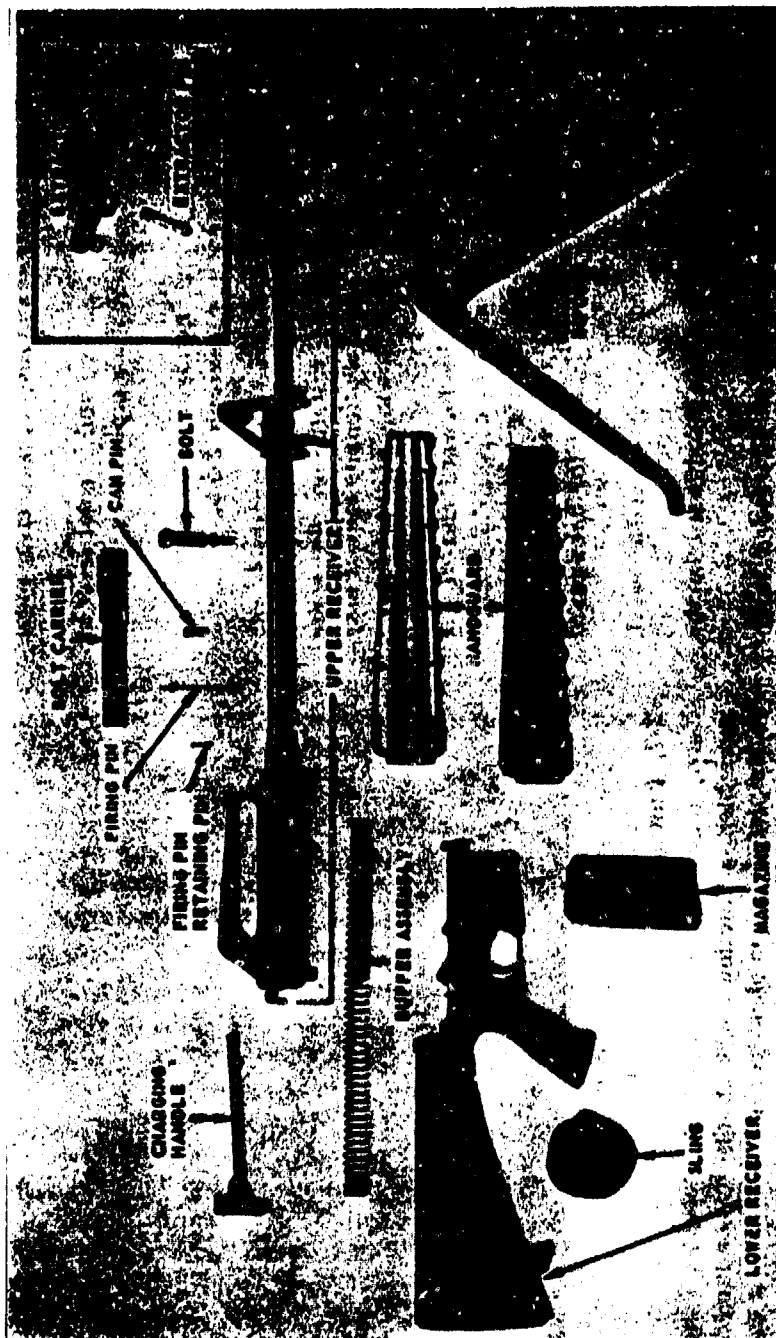


Figure 2



## **1. General Data**

### **A. Operational Characteristics:**

- 1) Maximum Rate of Fire-- 700 to 800 Rounds Per Minute
- 2) Maximum Effective Rate of Fire:
  - a. Semiautomatic----- 45 to 65 Rounds Per Minute
  - b. Automatic----- 150 to 200 Rounds Per Minute
  - c. Sustained Rate of Fire- 12 to 15 Rounds Per Minute
- 3) Maximum Range----- 2,653 Meters

### **B. Length----- 39.00 Inches**

### **C. Sights:**

- 1) Front-- Adjustable Post
- 2) Rear--- Adjustable Flip-Type Peep Sight. Normal Range Setting is From 0 to 325 Meters; Long Range Setting (L) 325 to 460 Meters.

### **D. Ammunition:**

- 1) Caliber----- 5.56 mm
- 2) Types----- Ball, Tracer, Dummy, Blank

## **2. Operation**

### **A. Loading:**

- 1) The magazine has a raised part that looks like a round of ammunition. Bullets are loaded into the magazine so that the rounds point in the same direction as the raised part of the follower. Press down on the round until it snaps into the magazine. Repeat this until the magazine is loaded. Do not load more rounds than the magazine is supposed to hold (20 or 30).
- 2) Pull the charging handle and lock the bolt to the rear.
- 3) Place the weapon on safe.
- 4) Put the magazine into the magazine well and push up until a click is heard.

- 5) Tap upward on the magazine to make sure it has been properly seated.
- 6) Allow the bolt to go forward.
- 7) Strike the forward assist.

**B. Unloading:**

- 1) Place the weapon on safe.
- 2) Press the magazine release button and remove the magazine.
- 3) Pull the charging handle to the rear and inspect the chamber to make sure it is clear.
- 4) Lock the bolt to the rear.
- 5) Push the charging handle forward.

**3. Immediate Action:** Immediate action gets your rifle working again if a malfunction occurs. The key word to remember is SPORTS. This will give you the six steps used to pull immediate action. SPORTS is:

- A. Slap upward on the magazine.
- B. Pull the charging handle to the rear.
- C. Observe the ejected round and look into the chamber to make sure it is clear.
- D. Release the charging handle and let the bolt go forward.
- E. Tap the forward assist.
- F. Squeeze the trigger.

**4. Remedial Action:** Remedial action is taken when immediate action has not solved the malfunction.

- A. Attempt to put the weapon on safe.
- B. Remove the magazine.
- C. Pull the charging handle to the rear and lock the bolt.
- D. Put the weapon on safe.

- E. Inspect the chamber.
- F. Rod the bore {while in training this will be done by the safety NCO}.
- G. Reload the magazine and attempt to fire.

5. Clearing: The first thing you do when you handle any weapon is to make sure it is safe. These six steps are important because they could save a life.

- A. Attempt to put the weapon on safe. If you cannot do this do not worry. This only means your rifle is not cocked. Do not cock it.
- B. Remove the magazine.
- C. Lock the bolt to the rear
- D. Inspect the chamber to make sure it is clear.
- E. Allow the bolt to go forward.
- F. Put the weapon on safe.

6. Function Check: Each time you take apart and put together your rifle you must perform a function check. This will let you know if you made a mistake. You might have put the rifle together wrong or left something out.

- A. With the select lever on SAFE, cock the weapon. When you pull the trigger the hammer should not fall.
- B. Move the select lever to SEMI and pull the trigger. The hammer should fall. Next, hold the trigger to the rear, recock the weapon, and release the trigger. You should hear a click. Now, pull the trigger again and the hammer should fall.
- C. Move the select lever to AUTO. Cock the weapon and pull the trigger. The hammer should fall. While holding the trigger to the rear, recock the weapon. When you release the trigger you should not hear a click. Pull the trigger one final time and the hammer should not fall.

7. Care and Cleaning: Many malfunctions occur because a soldier has not taken care of his weapon. In combat, this can be a deadly mistake. If you clean, oil, and take care of your weapon it will fire when needed. Being an expert means being able to shoot well and knowing how to care for your weapon. Once your weapon is disassembled all parts should be inspected for wear or damage and then properly cleaned.

A. *The Bore and Chamber*: Attach the bore brush to a cleaning rod, dip it in bore cleaner, and brush the bore from chamber to muzzle. Push the brush through the bore until it extends beyond the muzzle. Do not brush back and forth while the brush is in the barrel. Pull the brush until it comes out of the bore. Continue brushing until the bore is clean. Next, attach the chamber brush to the cleaning rod, dip it in bore cleaner, and insert it into the chamber. Turn the brush several times to insure all dirt and carbon is removed. Attach swab to cleaning rod and dry bore and chamber. Change swabs each time and continue until the swab comes out clean and dry. After cleaning, apply LSA (oil) to a clean swab and lightly oil the bore and chamber.

B. *Bolt Carrier Group*: Once the bolt carrier group has been disassembled clean all parts and outer surface with a swab soaked in bore cleaner. Clean bolt carrier key with a bore brush dipped in bore cleaner. Dry bolt carrier key with a pipe cleaner. Make sure you clean the dirt and carbon deposits from the locking lugs of the bolt. Using a small brush dipped in bore cleaner scrub extractor, firing pin recess, firing pin, and ejector and spring. Before you reassemble, apply a light coat of LSA to the outside of the bolt body and one drop of LSA in the bolt carrier key.

C. *Upper Receiver:* Clean upper receiver with bore cleaner. Do not use wire brush on aluminum surface. Clean the outside of the gas tube with a brush dipped in bore cleaner. Clean the top of the gas tube by inserting the brush through the back of the receiver. After cleaning, coat the inner surface of the upper receiver with a light coat of LSA.

D. *Lower Receiver:* Wipe dirt from the trigger housing with a swab or brush. The parts which are coated with carbon will also be cleaned with bore cleaner and brush. Use scrubbing action to remove all carbon and dirt. Drain the excess bore cleaner and wipe dry. After lower receiver has been cleaned and dried, apply a light coat of LSA to the buffer, buffer spring, and inner surface of lower extension. Also apply a light coating to the lower receiver and all inner parts.

E. *Magazines:* Weapon Malfunctions may be caused by a dirty or faulty magazine. Clean the inside and outside of the magazine with a dry cloth. Apply a light coat of LSA to the magazine springs only. Do not oil the body of the magazine or the magazine follower. If a clean magazine causes a malfunction, replace it with a new one.

## The Four Fundamentals of Rifle Marksmanship

The four fundamentals of rifle marksmanship are the most important things you will learn during BRM training. These fundamentals, and how to use them, are important to your becoming an expert rifleman with your M16A1 rifle.

1. Steady Position: The first thing you must do is learn to hold the weapon in a good steady position. During BRM you will use two firing positions. These are the foxhole supported firing position and the prone unsupported firing position. It is important that you practice holding your weapon steady in each of these positions before you fire your rifle. Both positions will be discussed in detail later.

2. Aiming: Your M16A1 rifle has two sights: the rear peep sight and the front sight post. A good firing position places your aiming eye close behind the rear peep sight. You must look through the round hole in the peep sight making sure the tip of the front sight post is centered in the rear peep hole. With a little practice, when you focus on the tip of the front sight post, your eye will automatically center the front sight post in the rear sight. Figure 3 on page 11 shows what you see when you correctly aim your weapon. Once this has been done, the aiming task is simple: you place the front sight post on the target.

3. Breath Control: It is impossible to hold your M16A1 rifle steady while breathing. To keep the front sight post on the target, breathing must stop before you fire. While you are reading this you are breathing in and out. If you pay attention to your breathing you

CORRECT SIGHT ALIGNMENT



Figure 3

will see that just before you breathe in you have what is called a respiratory pause. This pause is nothing more than a short stop in breathing and lasts from 3 to 5 seconds. Since 3 to 5 seconds is plenty of time to shoot, you should fire during this pause because all body movement has stopped. It is important to remember that you should fire before any unpleasant feelings are noticed from holding your breath too long. When you have to shoot quickly, just stop breathing as you squeeze the trigger.

4. Trigger Squeeze: The fundamentals just discussed get your rifle into a good position and pointed at the target. All of this is wasted if good trigger squeeze is not used. Trigger squeeze is important for two reasons. First, a quick or jerky movement will move your point of aim off target causing you to miss. Second, when the rifle fires, it should be a complete surprise to you. If you know exactly when the rifle will fire, your body will tense up (without you knowing it) and you will again miss your target. So remember, when you squeeze the trigger do not use a quick or jerky action and do not guess when the rifle will fire.

What is a good trigger squeeze? A proper trigger squeeze should start with pressure on the trigger while you begin aiming your rifle. When you know how much pressure it takes to pull the trigger, apply about half that amount while aiming and the rest when you are sure the front sight post is on the target and your breathing has stopped. Once the trigger has been squeezed and the hammer falls, the bullet (traveling at 3,250 feet per second) will clear the barrel before body reflexes can disturb the aim of the rifle. If the front sight post moves off the target, hold the pressure on the trigger



until the sight post is back on target. You should never try to pull the trigger quickly when the sight is back on target. If you do, the sudden jerk will cause your round to miss. Remember, if you want to hit your target every time, get into a good steady position, put the front sight post on the target, stop breathing, and squeeze the trigger.

### Firing Positions

While you are in BRM you will be firing from two positions. These are the foxhole supported firing position and the prone unsupported firing position. It is most important to get a lot of practice holding your weapon steady in each of these positions before firing your M16A1 rifle.

1. Foxhole Supported: This is the steadiest firing position. To get into a good foxhole supported position there are six things you must do. First, the handguard of the rifle should rest in a "V" formed by the thumb and first finger of the hand that does not pull the trigger. The handguard should be held lightly and the weight of the weapon should be supported by the sandbags. Second, the butt of the rifle should be put firmly in the pocket of the shoulder. This will reduce the effect of recoil. Third, the firing hand should grasp the pistol grip and the first finger should be placed on the trigger. Insert the finger to about the first joint, but adjust the position of the finger on the trigger to what is best for you. You must be able to squeeze the trigger without any movement of the rifle. Fourth, your body weight should be supported by the firing side of the foxhole (right handed - right side; left handed - left side). The elbow of the firing arm

should be outside of the foxhole and against solid support. Fifth, you must have a good stock weld. A good stock weld is when your cheek is pressed against the stock, your nose close to or touching the charging handle (it will not come loose and hit you), and your aiming eye close to and directly behind the rear peep sight. Finally, you must relax. A good relaxed position will mean less tension and muscle strain. Figure 4 on page 15 shows what a good foxhole supported firing position looks like for right handed shooters.

2. Prone Unsupported: Unsupported means that your rifle is being held up by your arm and not by any other object (sandbags, logs, tree stumps, etc.). To get into a good prone unsupported position, the rifle is held up by the non-firing arm and hand. The non-firing elbow should be as far under the rifle as possible. Your legs should be spread a comfortable distance apart. Stock weld, rifle butt in shoulder, placement of trigger finger, and grasping of the handguard are the same for the prone position as they are for the foxhole position. Since the prone position is not as steady as the foxhole position, a small wobble area will exist. A wobble area is a small movement of the tip of the rifle while you are aiming. The trigger squeeze rule mentioned above should be used when firing from this position. With practice the prone unsupported position can be adjusted so that it is a very steady and comfortable position. Figure 5 on page 16 shows what a good prone unsupported firing position should look like.



**Figure 4**

PRONE UNSUPPORTED FIRING POSITION



Figure 5

## How to Zero Your M16A1 Rifle

Sometimes your bullets hit a different spot than where you wanted. One reason for this may be that your rifle sights are not lined up with the rifle barrel. This is why you must ZERO your rifle. When you zero your rifle you change (click) the sights (front and/or rear) to move the 3-round shot group so that it hits where you want it to. If your rifle is not zeroed, the sights will be pointed in one direction and the barrel in another. Zeroing will make the sights and barrel point in the same direction. Look at Figure 6 on page 18. This is the target you will be using when you zero your rifle. When zeroing your rifle your goal is to get your shot group as close to the dot at the center of the circle as you can. Remember, you will have to aim your rifle at the center of the black silhouette. A good zero is when all the shots hit very near the dot.

*To zero your M16A1 rifle follow these steps:*

1. Flip the rear sight forward so that the letter "L" can be seen.
2. Fire a 3-round shot group. Fire each shot the same way. Remember to keep a steady position so that you hold the rifle on target without wobble. Place the of the front sight post at the center of the tar (Figure 7, page 19). Stop breathing. Squeeze the trigger so that the rifle does not move and you do not know when it is going to fire.
3. Draw lines to connect the bullet holes and place a number inside the triangle to let you know which shot group it is (1, 2, 3, etc.).
4. If it looks like your shot group would fit inside the circle on the target (if you moved the circle on top

25 METER ZEROING TARGET FOR M16A1 RIFLE  
(WITH STANDARD SIGHTS)

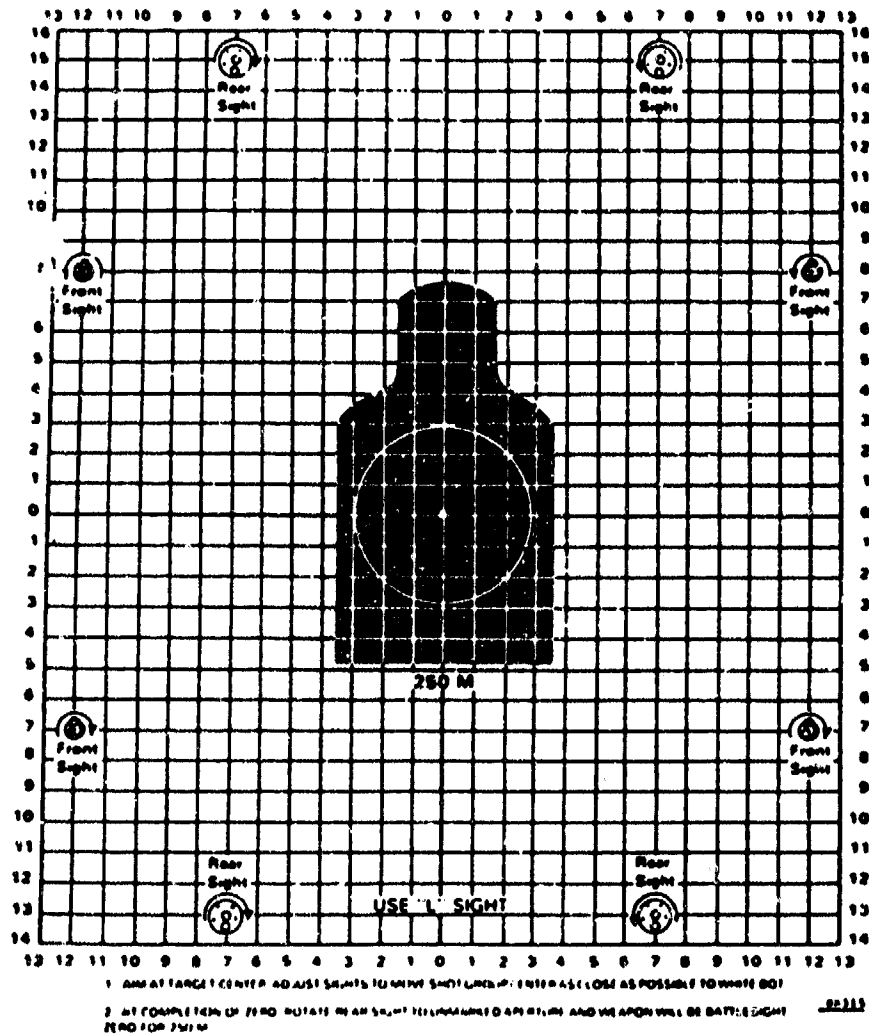


Figure 6

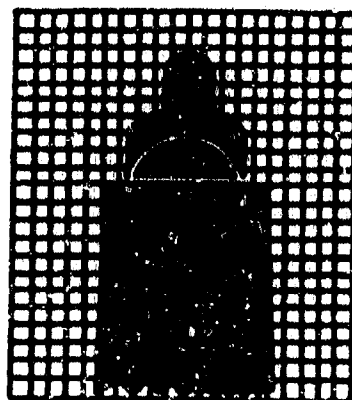


Figure 7

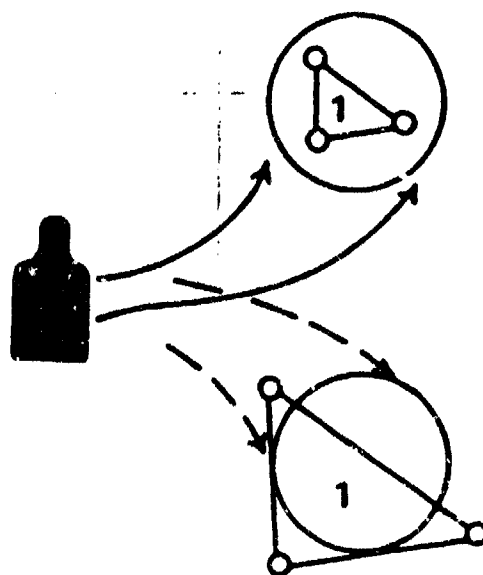


Figure 8

of the group) you may make sight changes. If your shot group is bigger than the circle do not change your sights (Figure 8, page 19). You need more practice and maybe some help from an instructor.

6. Find the horizontal line (the line that goes left to right) nearest the center of the shot group. Follow that line to the left or right closest edge of the target. Move your front sight the number of clicks marked on the line. Move the sight in the direction the arrow on the target shows.

7. Next find the vertical (up and down) line nearest the center of the shot group. Follow that line to the top or bottom of the target. Move your rear sight the number of clicks marked on the line. Move sight in the direction the arrow on the target shows.

8. Fire another shot group to be sure the bullets hit near the dot. If they do not hit near the dot, triangulate and number the group and make sight changes again. Remember, the nearer to the dot at the center of the circle the better.

9. If you get all 3 shots inside the 4 cm circle you have zeroed and do not need to make further sight changes.

10. Once zeroed, flip the rear sight back to the normal position. The rifle is now zeroed for 250 meters. This means that when you shoot at a 250 meter target the bullets should hit where you aim. This will be explained in more detail later.



## The Effects of Wind and Gravity

There are many factors that can affect a bullet while it is traveling through the air. Only two of these, wind and gravity, make a big change in where your round will hit. It is important for you to know how wind and gravity can affect bullet strike and what you as a rifleman can do to adjust for them.

1. The Effects of Wind: Because the bullet is going at a high rate of speed (3,250 feet per second) you would not think that wind could affect the bullet. If you look at Figure 9 on page 22 you will see that this is not true. On many ranges a 10 mph wind is common. Figure 9 shows what effect a 10 mph wind blowing across the range has on bullet flight. Notice that while wind does not have much effect at close ranges, it does beyond 150 meters. At 300 meters this can be as much as 15 inches!

Winds are labeled by the direction in which they are blowing. The Clock system is used when talking about wind direction. Look at Figure 10 on page 23. As you can see, a wind blowing across the range from left to right (or right to left) is called a "full value" wind. A "half value" wind blows at an angle across the range, either towards you or from your rear. Finally, a "no value" wind blows straight at you or straight from behind you.

Look again at Figure 9. As was mentioned above, this shows the effect of a 10 mph full value wind blowing from 3 o'clock (right to left). If this had been a half value wind, the effect would be half as much. Since a 10 mph full value wind will move the strike of the round 15 inches at 300 meters, a half value 10 mph wind will move the round only 7 1/2 inches at the same distance;

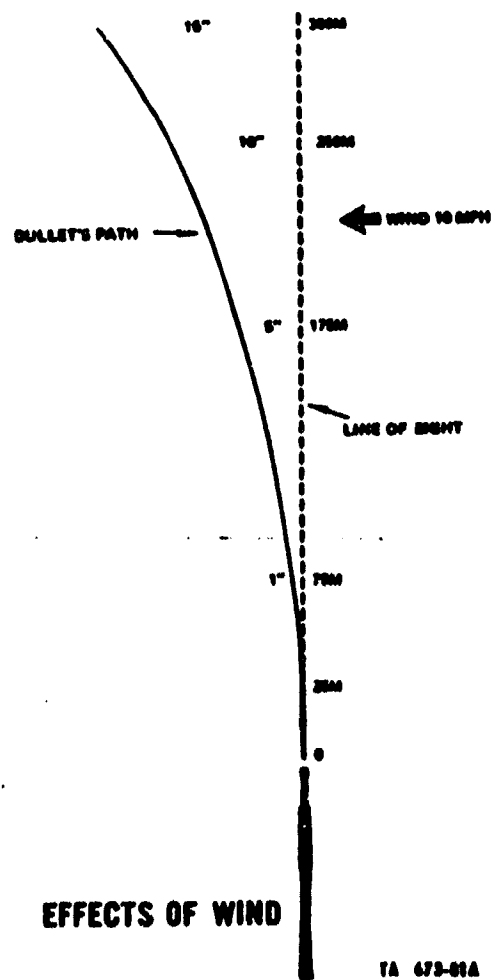


Figure 9

# THE CLOCK SYSTEM FOR WIND DIRECTION

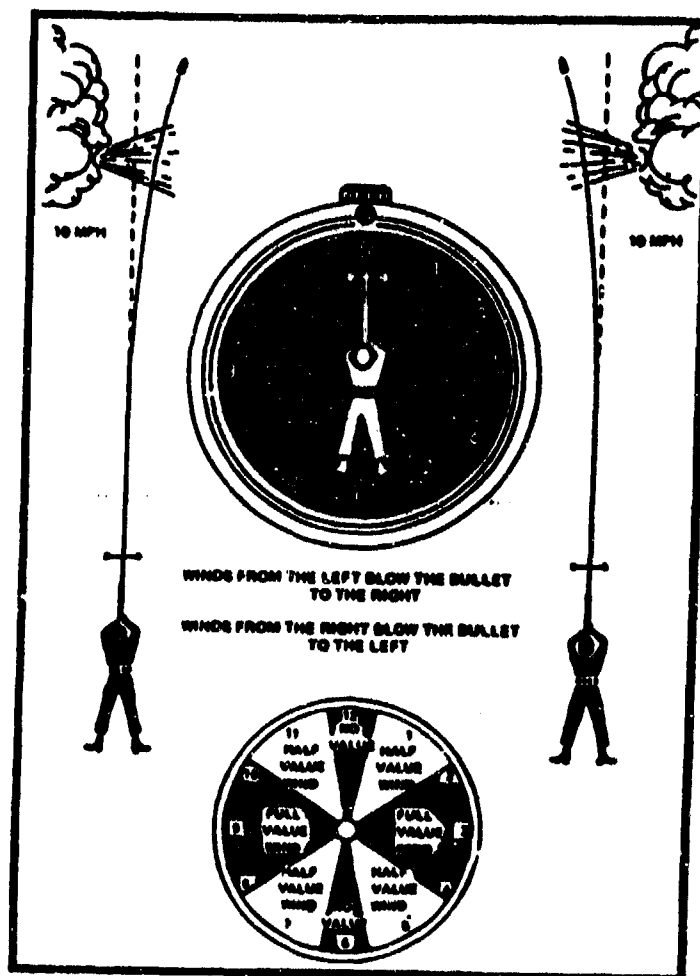


Figure 10

at 250 meters only 5 inches; at 175 meters only 2 1/2 inches, and so on. A 20 mph full value wind will move the strike of the round twice as much as a 10 mph full value wind. It is also important to remember that a half value wind has only half the effect of a full value wind. This means a 10 mph half value wind is the same as a 5 mph full value wind. Each will move the strike of the round 7 1/2 inches at 300 meters. A no value wind will have little affect on bullet strike regardless of its speed.

How much would a 10 mph half value wind move the strike of the round at 250 meters? Think about this for a moment. If you are confused, review the last section. Remember, a half value wind will move the strike of the round only half as much as a full value wind. If you said 5 inches you would be correct. Let's try one more. How much would a 20 mph half value wind move the bullet at 175 meters? The answer is 5 inches.

In combat or on the record fire range you will not have the time to adjust your rear (also called windage) sight when you know the wind will affect where you hit your target. You must, therefore, use what is called the holdoff technique or adjusted aiming point. Figure 11 on page 25 shows how you would place your front sight on the target so that you will hit center of target mass while firing in a 10 mph full value wind.

Holdoff is not as important for targets located closer than 150 meters as it is for targets located farther downrange. Therefore, whenever wind becomes a factor, use more and more holdoff as target distance increases. Remember that the example in Figure 11 is for 10 mph full value wind. During your BRM training you will learn how to estimate wind velocity and how much to adjust your aiming point for different wind speeds and

# HOLDOFF FOR WIND

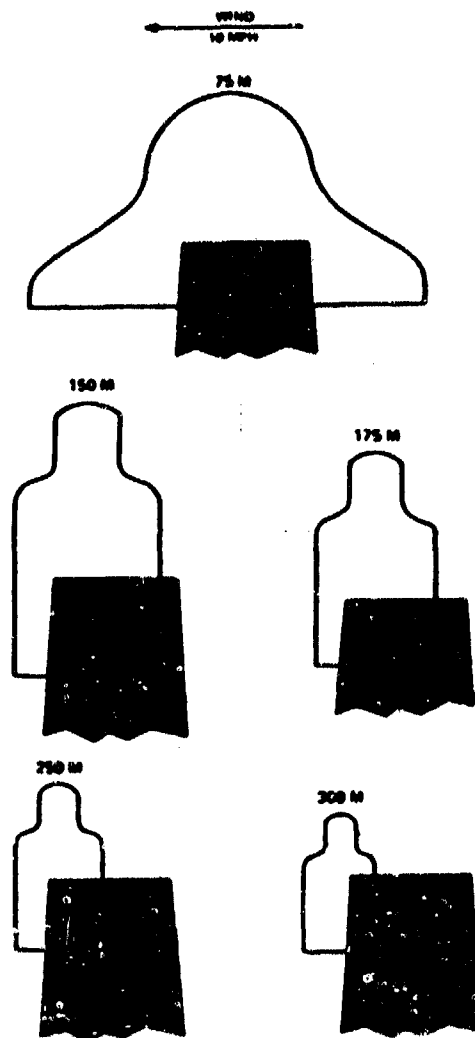


Figure 11

for those coming from different directions. Use this knowledge about wind effects to hit more targets. But, if you get mixed up just remember to aim for the center of the target and you will hit most targets.

2. The Effects of Gravity: Gravity will have the same effect on a bullet fired at a 300 meter target as it will on a bullet you hold 24 inches above the ground and drop. In other words, the bullet when fired will drop 24 inches before reaching the target. As Figure 12 on page 27 shows, the greater the range the more gravity will effect bullet strike.

To overcome the effects of gravity, your weapon sights will be adjusted so that where you aim is where your bullet should hit at 250 meters. You do this by zeroing your rifle using the long range (L) sight. Once you have zeroed your rifle, flipping to the short range sight gives you what is called 250 meter Battle Sight Zero (BSZ). What this means is that at 250 meters bullet strike and point of aim are the same. In other words, you will hit where you aim. Figure 13 on page 28 shows the trajectory of the bullet when you have zeroed your weapon for 250 meters. As you can see you have gotten rid of most of the problem caused by gravity. Now when you aim at the 300 meter target your bullet strike will be 5 inches below point of aim instead of 24 inches. At 250 meters, bullet strike and point of aim are the same. At targets located 75 meters to 200 meters, bullet strike will be slightly above point of aim. And, at 25 meters a little below point of aim.

During your BRM training you will be using both the long range sight and the short range sight. The long range sight will be used whenever you fire at targets

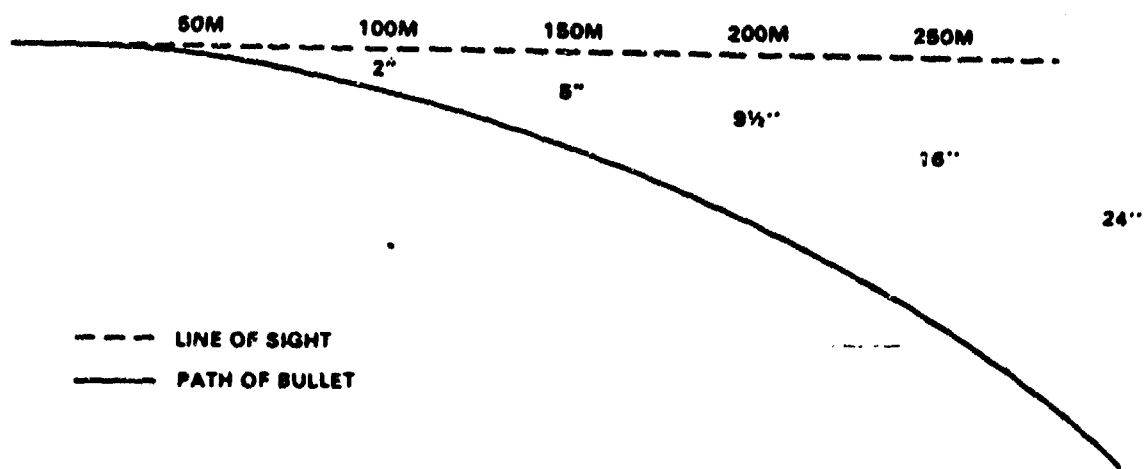


Figure 12

# TRAJECTORY OF BULLET WITH 250 METER BSZ

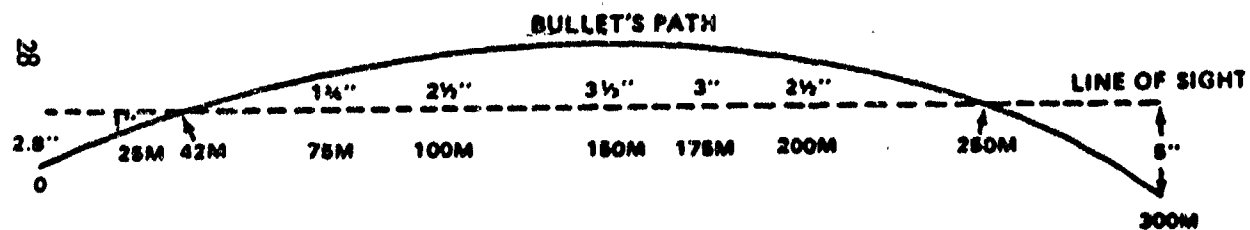


Figure 13



located 25 meters downrange. The short range sight will be used during your field fire exercises. Figure 14 on page 30 is a drawing of the trajectory of your bullet when you use either the short range sight or the long range sight once you have zeroed your weapon for 250 meters. Look at the trajectory for the long range sight. As you can see, once you have a 250 meter BSZ, flipping to the long range sight will extend your zero out to 375 meters. You will also notice that point of aim and bullet strike are the same at 25 meters. So, flipping your sights to long range will allow you to hit where you aim when firing at targets 25 meters downrange.

Just as with wind effects you can use holdoff to adjust your point of aim so that you will hit center of target mass. Figure 15 on page 31 shows where to place your front sight post on targets from 75 meters to 300 meters downrange. Both the effects of wind and gravity should be taken into consideration when you are in battle or on a rifle range. Use this knowledge about gravity to hit more targets. If you get mixed up, just remember to aim for the center of the target and you will hit most targets.

# TRAJECTORY OF BULLET USING LONG OR SHORT RANGE SIGHT

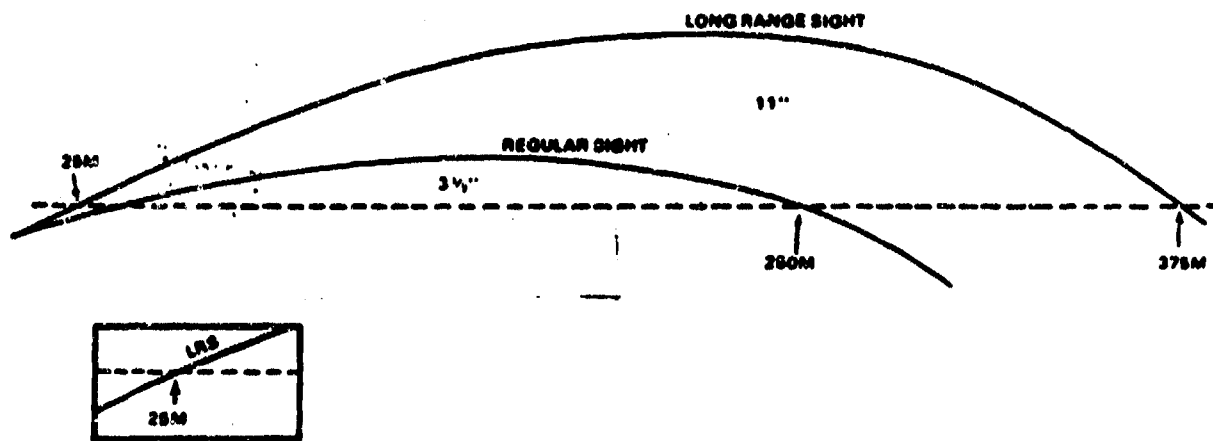


Figure 14

HOLDOFF FOR GRAVITY

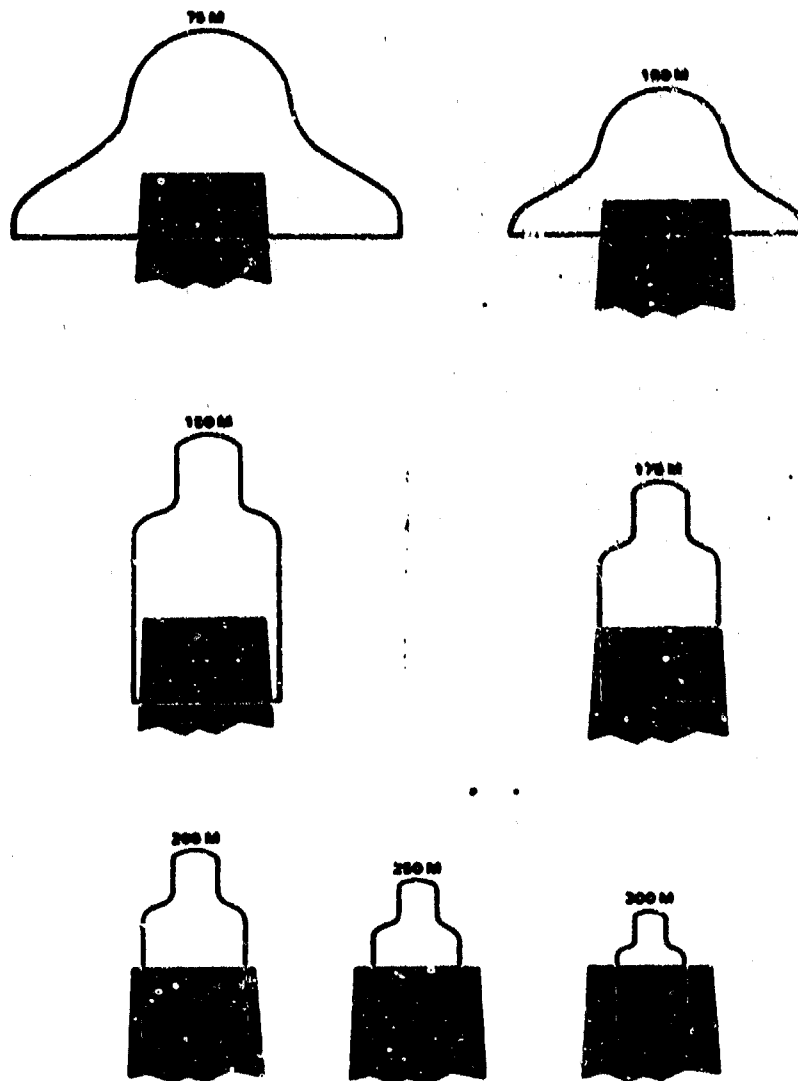


Figure 15

## Basic Rifle Marksmanship Training

To help you understand better and get more out of Basic Rifle Marksmanship (BRM) training, here is a brief outline of each period and things you should learn.

Period 1 - Introduction to Rifle Marksmanship and Mechanical Training: During Period 1 you will learn the names and locations of the different parts of the M16A1 rifle. You will be taught how to disassemble and assemble your rifle and learn how to perform a function check. Cleaning and maintaining your rifle is important and will be presented. How to load and unload your rifle and magazine will be covered. Immediate action or remedial action are things to do if your rifle fails to fire. Both will be covered in this first period. Finally, you will be told what the rifle can and cannot do and be given an overview of BRM.

Period 2 - Fundamentals of Shooting (Dry Fire): To be a good marksman you must understand and practice fundamentals. This period will introduce the four fundamentals of rifle marksmanship (steady position, aiming, breath control, trigger squeeze) and the foxhole supported and prone unsupported firing positions. You will be taught how to dry fire (aiming and squeezing the trigger without live ammunition) at "targets" 25 meters down-range. Dry fire is a valuable learning tool that lets you practice the four fundamentals and improve your shooting skills.

Period 3 - Fundamentals of Shooting (Live Fire): During Period 3 you will practice the four fundamentals by firing with live ammunition. You will also learn how to

shoot tight shot groups and find out what it means to zero your rifle. You will learn what a 250 meter battle-sight zero is. Period 3 also introduces you to the concurrent training area (also called station) where you will spend time with an instructor learning new subjects or going over those things you were taught while in the bleachers. Whenever you are not on the firing line you will go to one or more concurrent training areas.

Period 4 - Practice Firing (Zero): During Period 4 you will zero your rifle. A properly zeroed weapon is very important in becoming an expert rifleman. Without it, an expert badge is almost impossible to obtain. It is important that you keep in mind the four fundamentals whenever you fire your M16A1 rifle. This is especially true during the zeroing process because you cannot zero a rifle if you can't fire tight shot groups. Finally, during Period 4 you will receive an introductory lecture about the effects of wind and gravity on the flight of the bullet.

Period 5 - Practice Firing (25 Meter Silhouette): During Period 5 you will be firing at scaled silhouettes representing targets 75, 175, and 300 meters downrange. A scaled silhouette target lets you practice firing at long range targets from a short range. A scaled silhouette target is reduced in size so that when placed at 25 meters, the picture you see is what the real target would look like at its actual range. The silhouette is also about as difficult to hit as the actual target at real range. One advantage of the scaled silhouette target is that where you hit or miss the target will be about the same place you would hit or miss the actual distant target. More important is the feedback you will

get about your hit or miss location by inspecting your target. Feedback allows you to see where you are hitting and, if you are having problems, lets you take corrective action.

Period 6 - Downrange Feedback, 75 and 175 Meters:

During Period 6 you will be firing at targets 75 and 175 meters downrange and then walking to the targets to see the results. This will be the first time you will be firing at long range targets. They will be placed on big enough background paper so that you will be able to see where your hits or misses went. You will find out how well you can hit distant targets and see first-hand how wind and gravity can effect bullet strike. Period 6 will introduce you to holdoff techniques for wind and gravity (adjusting your point of aim to overcome these effects). You will also have the opportunity to make any needed sight changes.

Period 7 - Field Fire (Single Targets) and Target Detection: Period 7 will introduce you to the field fire range and to pop-up targets that fall when hit. There are two sizes of field fire targets. The first is the "E" type-representing a kneeling enemy soldier and the second is the "F" type-representing an enemy soldier in the prone position. This will be the first time you experience field fire targets similar to those you will fire at during record fire qualification. Only one target (75, 175, or 300 meters) will come up at a time. You will have 5 seconds to find, aim, and shoot the 75 and 175 meter targets and 10 seconds for the 300 meter target. This is designed to begin to give you an idea of what you will be facing when you get to record fire.

Knowing how to spot a target is very important to

becoming an expert rifleman. During Period 7 you will be introduced to the techniques of target detection and how this will aid you in hitting more targets.

Period 8 - Field Fire (Single and Multiple Targets):

Period 8 is similar to Period 7 except that more than one target may be exposed at a time. The 75, 175, and 300 meter targets will again be used for this instruction. You will have a time limit of 3 to 12 seconds depending on which target or combination of targets appear.

Period 9 - Zero and Timed Fire: Period 9 contains two different exercises. First, you will prepare for record fire by reconfirming and improving your zero now that you are a better shooter. This rezeroing is very important since your qualification is just a few days away. The second exercise is firing at a target containing several scaled silhouettes similar to those in Period 5. This time six ranges are represented (50, 100, 150, 200, 250, and 300 meters) and you will have a limited time to fire at all the silhouettes (45 seconds in the foxhole position and 55 seconds in the prone position). This exercise will put you under pressure somewhat like that of record fire but you will be able to see where your hits and misses land.

Period 10 - Practice Record Fire: Period 10 is a practice for record fire. You will experience what it will be like to fire the record fire course. This will enable you to see how well you are shooting and help you learn about the test so that you can improve your score.

Period 11 - Combat Firing and Record Fire: Period 11

is broken into two stages. The first is Combat Firing. Here you will be firing at 20 targets from the foxhole supported firing position and 20 targets from the prone unsupported firing position. You will be required to change magazines in the middle of firing and are also allowed to fire more than one round at missed targets. Combat Firing is so named because it is designed to give you an idea of what real combat is like.

The second portion of Period 11 is Record Fire. This is where everything you have learned in the previous ten periods is put to the test. This is your qualification day. You will be firing at 40 targets- 20 from the foxhole supported firing position and 20 targets from the prone unsupported firing position. Scoring at record fire is:

36-40 hits:	Expert
30-35 hits:	Sharpshooter
23-29 hits:	Marksman
22 or less:	Unqualified

Period 12 - Automatic Firing: Period 12 will introduce you to automatic firing techniques. You will use these techniques to hit targets while firing from the modified prone and foxhole positions. You will be firing on a 25 meter range at a scaled silhouette target identical to the one in Period 5. Learning how to adjust your trigger squeeze to achieve a 2 to 3-round shot burst is another part of this period.

Period 13 - Protective Mask Firing: Firing and hitting your target while wearing a protective (gas) mask is a little harder. During Period 13 you will be shown how to achieve target hits while wearing a mask. Briefly this involves canting your weapon. A weapon cant is



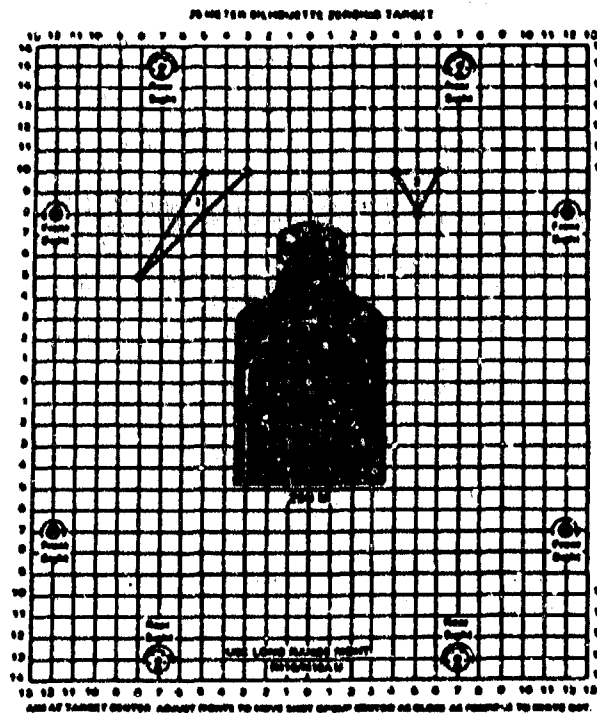
when you tilt the rifle to the left or right (depending on whether you are right or left handed) until you can see through the sights.

Period 14 - Night Firing: Shooting the M16 at night requires the use of different techniques than the ones you normally use during daylight hours. Period 14 will teach you how to effectively engage targets in a limited and no light environment.

### How To Use the Performance Record

On the following pages you will find a section of blank targets and scorecards. Each time you visit a BRM period of instruction you must record how you did. The information needed is: where you are hitting your targets, the number of times you hit or missed the target, and the number of no fires. Finally, on some of the targets you are required to keep track of any sight changes you make. Remember, it is important to keep neat and accurate records. If you are not shooting well or if you wish to improve your skills even further, your sergeant or other training personnel must have clear information to help you.

1. Periods 3 and 4: During these periods you will be using a target similar to the ones in Figures 16 and 17 on pages 39-40. As you can see, two shot groups were fired at the target in Figure 16. Each shot group was triangulated (lines drawn to connect the bullet holes) and numbered. Look at the first shot group. Because it is larger than the 4 cm circle this individual did not attempt to change his sights. In the area below the target where it asks if you have zeroed, he placed an "X" in the no box. After firing his second shot group, he discovered that it was smaller than the 4 cm circle. He can now make sight changes. Once he found the center of the shot group, he followed the lines to the top and right-hand side of the target. Here he found out how much to change his front and rear sights. He then wrote that information in the area marked "2nd Shot Group" and placed an "X" in the no box. His third shot group is shown in Figure 17. This shot



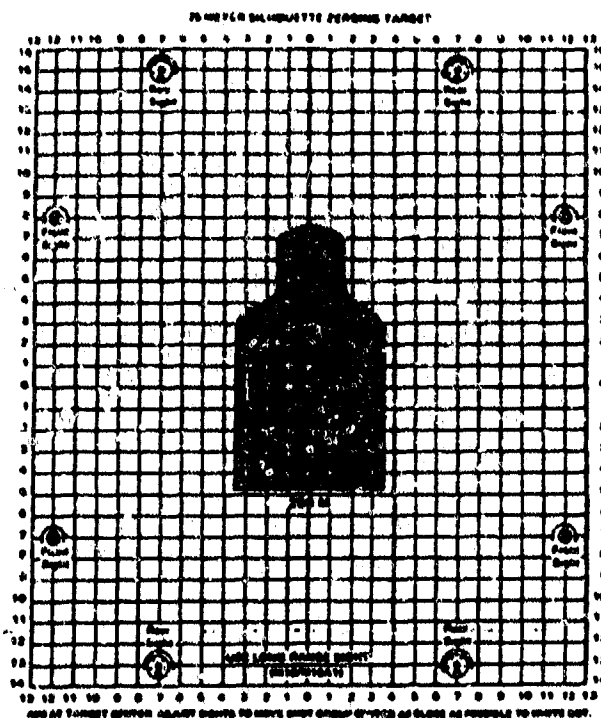
(1st Shot Group)

Up \_\_\_\_\_  
 Down \_\_\_\_\_  
 Left \_\_\_\_\_ Zeroed? Yes \_\_\_\_\_ No X  
 Right \_\_\_\_\_

(2nd Shot Group)

Up \_\_\_\_\_  
 Down 9 Zeroed? Yes \_\_\_\_\_ No X  
 Left 5  
 Right \_\_\_\_\_

Figure 16



(3rd Shot Group)

Up \_\_\_\_\_  
 Down \_\_\_\_\_  
 Left \_\_\_\_\_ Zeroed? Yes X No \_\_\_\_\_  
 Right \_\_\_\_\_

(4th Shot Group)

Up \_\_\_\_\_  
 Down \_\_\_\_\_  
 Left \_\_\_\_\_ Zeroed? Yes X No \_\_\_\_\_  
 Right \_\_\_\_\_

Figure 17

group is where you want yours to be. This rifle is now zeroed for him and because no further sight changes are needed he placed an "X" in the yes box. If you zero before using all your rounds (18) you must still keep track of where you are hitting your target. Since you will not be making any further sight changes, the information at the bottom of each target can be left blank. See pages 43-49 for targets.

2. Period 5: You will fire three rounds at each target on the silhouette. You must mark the target hit locations and record the number of hits, misses, and no fires you had. You need not triangulate your shot group. See pages 50-51 for targets.

3. Period 6: These targets are marked in the same way as Periods 3 and 4. You must also record the number of hits, misses, and no fires. See pages 52-56 for targets.

4. Periods 7 and 8: During these periods you have no targets to mark but you must keep track of your hits, misses, and no fires on the scorecards. You must add up the number of hits, misses, and no fires for each table and total them for each period. See pages 57-62 for scorecards.

5. Period 9: The zero portion of Period 9 is done just like Periods 3 and 4. During the 25 meter silhouette firing you must mark on your target where you hit and record the number of hits, misses, and no fires on the scorecard. You must record the number of hits, misses, and no fires for each table and total them. See pages 63-68 for targets and scorecards.

6. Period 10: All you must do is record the number of hits, misses, no fires, and alibis in the boxes. See page 69 for table.

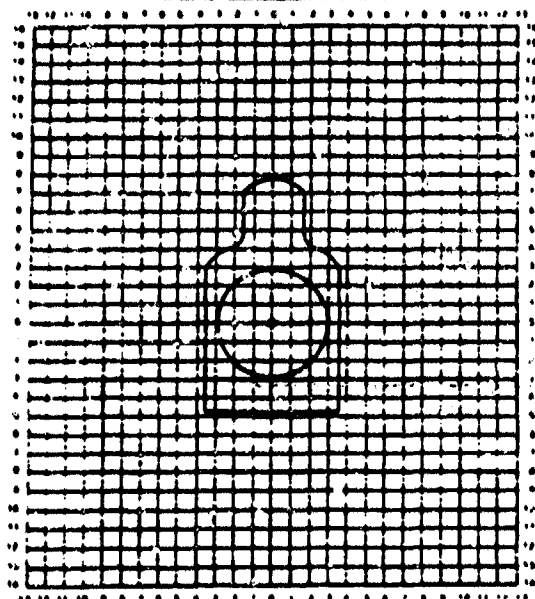
7. Period 11: This period is scored in the same way as Period 10. Both your combat fire and record fire results are needed. One final item required is your performance standing after record fire. See page 69 for table.

8. Periods 12 and 13: Records for these periods are marked in the same manner as Period 5. See pages 70-72 for targets.

9. Period 14: The results of this period are scored by a machine. There are no scorecards or paper targets you have to worry about. All you must do is record the number of hits and misses in the boxes. See pages 73 for table.

PERIOD 3: Live Fire

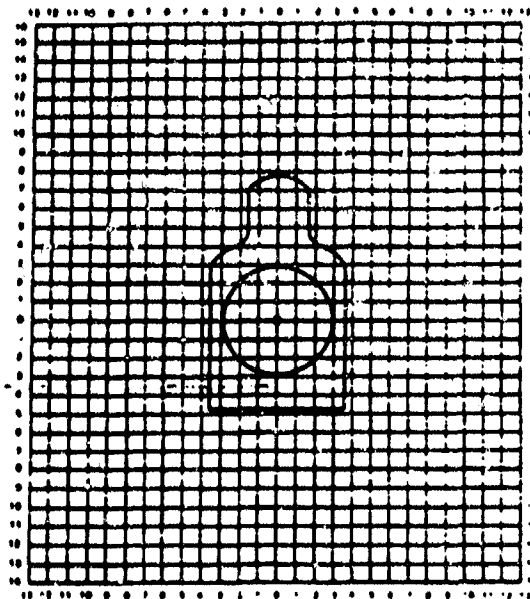
Foxhole Supported



(1st Shot Group)  
-NO SIGHT CHANGES-  
(2nd Shot Group)

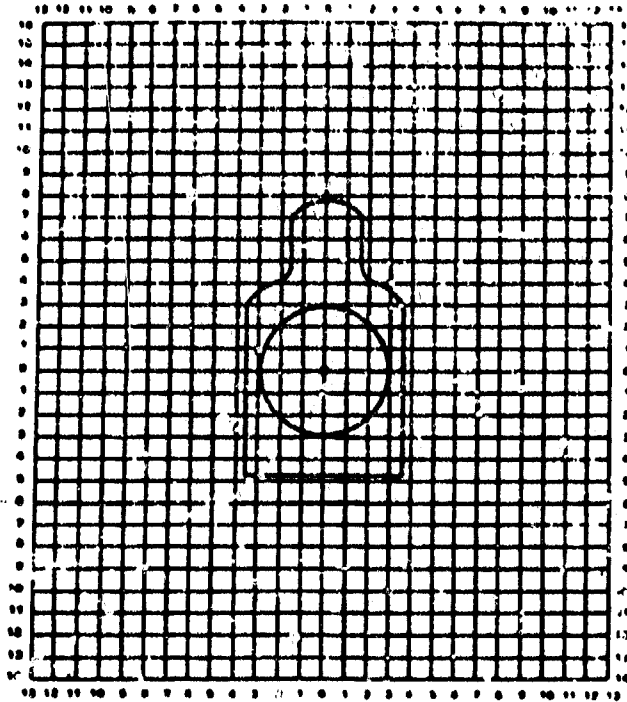
Up \_\_\_\_\_  
Down \_\_\_\_\_  
Left \_\_\_\_\_  
Right \_\_\_\_\_

Prone Unsupported



-NO SIGHT CHANGES-

PERIOD 4: Zero



(1st Shot Group)

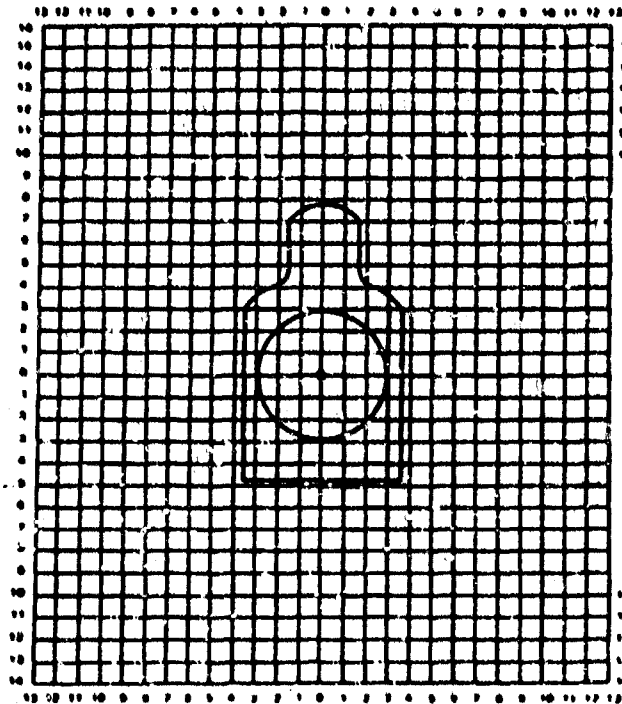
Up \_\_\_\_\_  
 Down \_\_\_\_\_  
 Left \_\_\_\_\_ Zeroed? Yes \_\_\_\_\_ No \_\_\_\_\_  
 Right \_\_\_\_\_

(2nd Shot Group)

Up \_\_\_\_\_  
 Down \_\_\_\_\_  
 Left \_\_\_\_\_ Zeroed? Yes \_\_\_\_\_ No \_\_\_\_\_  
 Right \_\_\_\_\_



# PERIOD 4: Zero



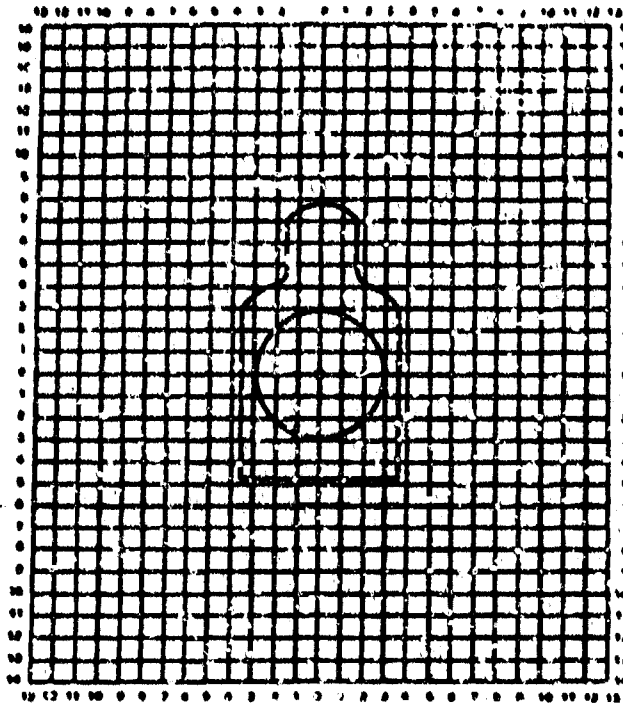
(3rd Shot Group)

Up \_\_\_\_\_  
 Down \_\_\_\_\_  
 Left \_\_\_\_\_ Zeroed? Yes \_\_\_\_\_ No \_\_\_\_\_  
 Right \_\_\_\_\_

(4th Shot Group)

Up \_\_\_\_\_  
 Down \_\_\_\_\_  
 Left \_\_\_\_\_ Zeroed? Yes \_\_\_\_\_ No \_\_\_\_\_  
 Right \_\_\_\_\_

PERIOD 4: Zero



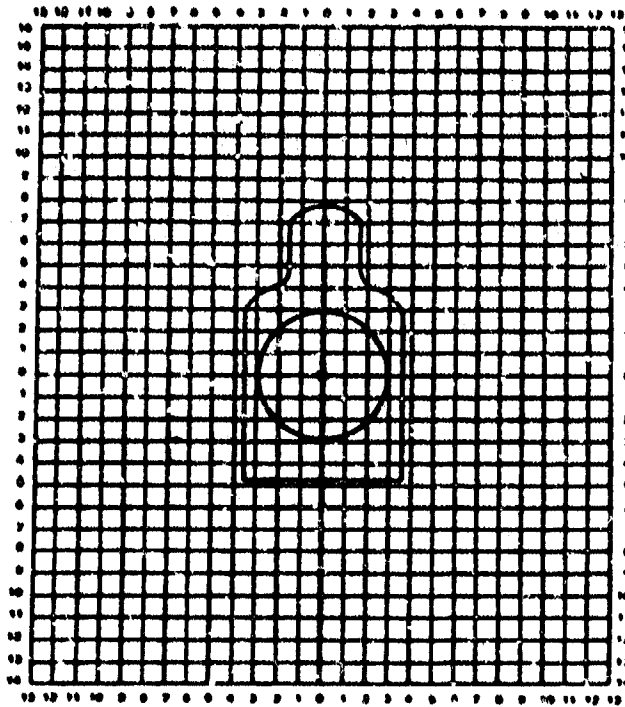
(5th Shot Group)

Up \_\_\_\_\_  
 Down \_\_\_\_\_  
 Left \_\_\_\_\_ Zeroed? Yes \_\_\_\_\_ No \_\_\_\_\_  
 Right \_\_\_\_\_

(6th Shot Group)

Up \_\_\_\_\_  
 Down \_\_\_\_\_  
 Left \_\_\_\_\_ Zeroed? Yes \_\_\_\_\_ No \_\_\_\_\_  
 Right \_\_\_\_\_

PERIOD 4: Zero (If Needed)



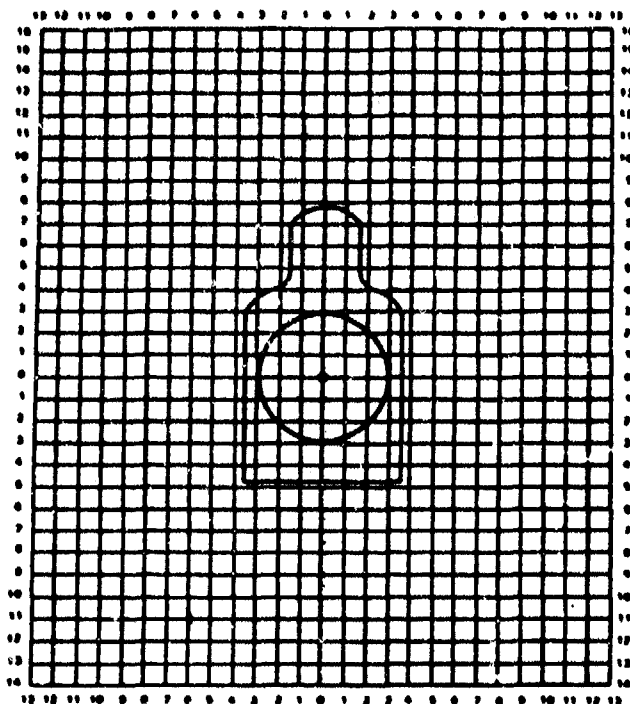
(7th Shot Group)

Up \_\_\_\_\_  
 Down \_\_\_\_\_  
 Left \_\_\_\_\_ Zeroed? Yes \_\_\_\_\_ No \_\_\_\_\_  
 Right \_\_\_\_\_

(8th Shot Group)

Up \_\_\_\_\_  
 Down \_\_\_\_\_  
 Left \_\_\_\_\_ Zeroed? Yes \_\_\_\_\_ No \_\_\_\_\_  
 Right \_\_\_\_\_

PERIOD 4: Zero (If Needed)



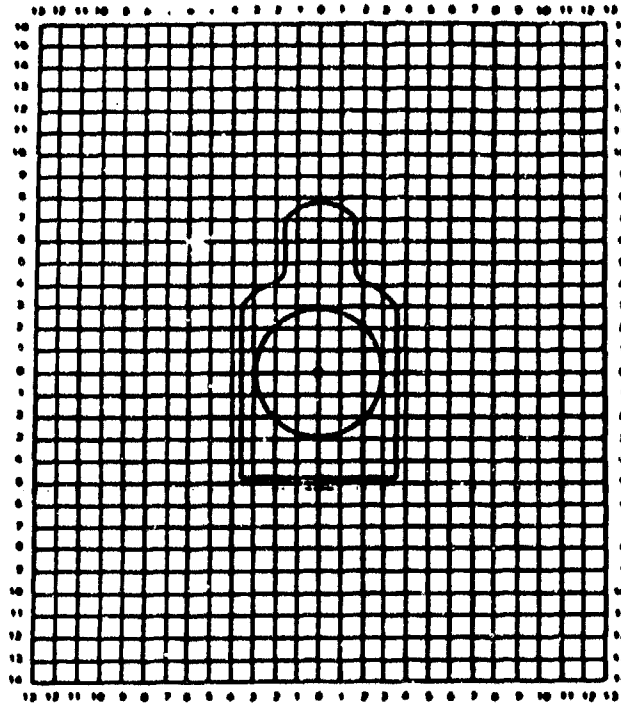
(9th Shot Group)

Up \_\_\_\_\_  
 Down \_\_\_\_\_  
 Left \_\_\_\_\_ Zeroed? Yes \_\_\_\_\_ No \_\_\_\_\_  
 Right \_\_\_\_\_

(10th Shot Group)

Up \_\_\_\_\_  
 Down \_\_\_\_\_  
 Left \_\_\_\_\_ Zeroed? Yes \_\_\_\_\_ No \_\_\_\_\_  
 Right \_\_\_\_\_

PERIOD 4: Zero (If Needed)



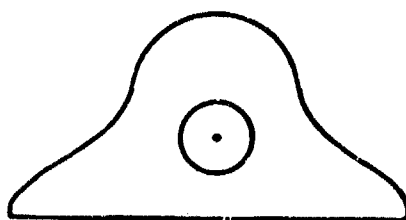
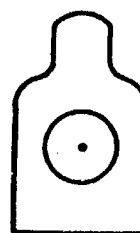
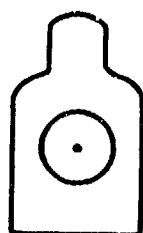
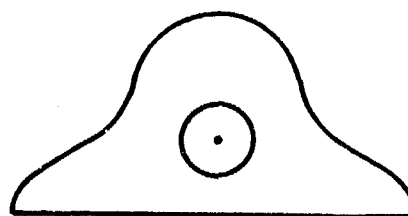
(11th Shot Group)

Up \_\_\_\_\_  
 Down \_\_\_\_\_  
 Left \_\_\_\_\_ Zeroed? Yes \_\_\_ No \_\_\_  
 Right \_\_\_\_\_

(12th Shot Group)

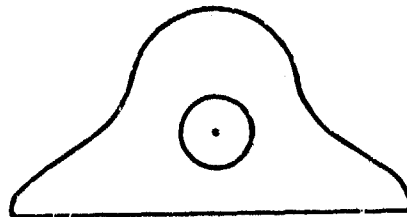
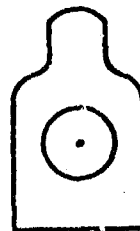
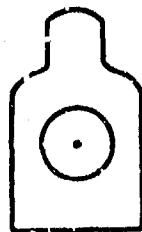
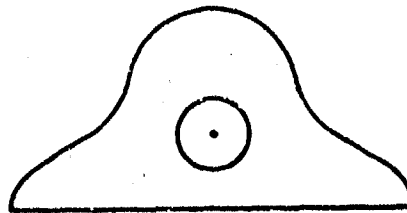
Up \_\_\_\_\_  
 Down \_\_\_\_\_  
 Left \_\_\_\_\_ Zeroed? Yes \_\_\_ No \_\_\_  
 Right \_\_\_\_\_

PERIOD 5: 25 Meter Silhouette



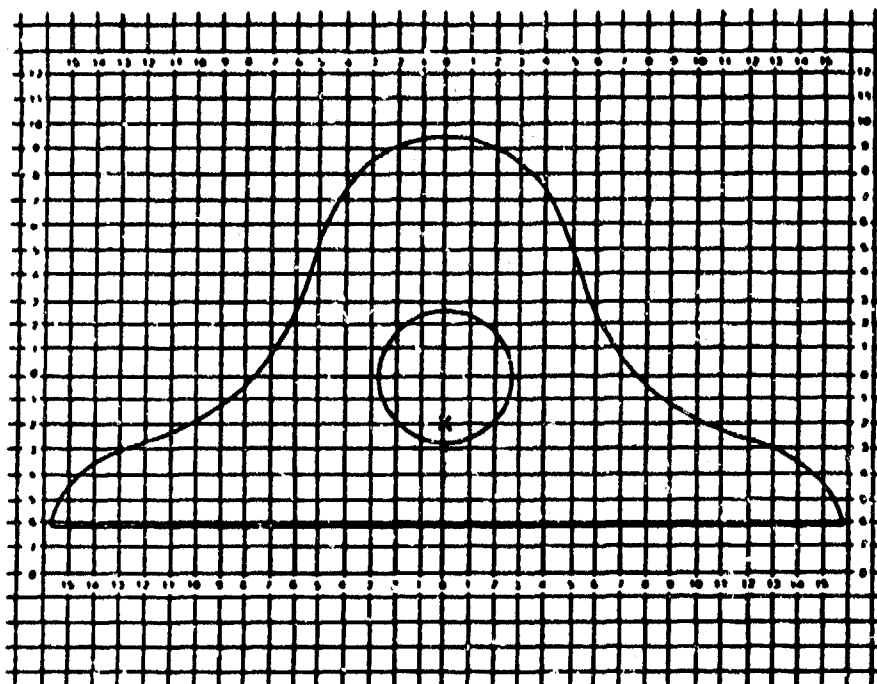
	<u>Foxhole Supported</u>		
75 Meter:	Hit <input type="checkbox"/>	Miss <input type="checkbox"/>	No Fire <input type="checkbox"/>
175 Meter:	Hit <input type="checkbox"/>	Miss <input type="checkbox"/>	No Fire <input type="checkbox"/>
300 Meter:	Hit <input type="checkbox"/>	Miss <input type="checkbox"/>	No Fire <input type="checkbox"/>

PERIOD 5: 25 Meter Silhouette



	<u>Prone Unsupported</u>		
75 Meter:	Hit <input type="checkbox"/>	Miss <input type="checkbox"/>	No Fire <input type="checkbox"/>
175 Meter:	Hit <input type="checkbox"/>	Miss <input type="checkbox"/>	No Fire <input type="checkbox"/>
300 Meter:	Hit <input type="checkbox"/>	Miss <input type="checkbox"/>	No Fire <input type="checkbox"/>

PERIOD 6: Downrange Feedback 75 Meters and 175 Meters



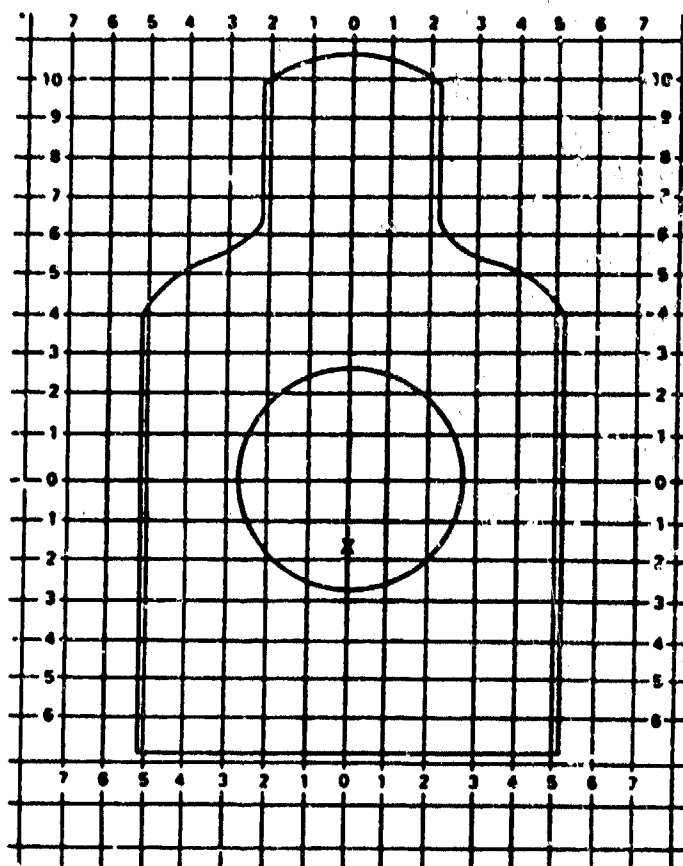
Foxhole Supported

(1st Shot Group-75 Meters)

Hit ☐ Miss ☐ No Fire ☐  
 Sights: Up ☐ Down ☐ Left ☐ Right ☐



PERIOD 6: Downrange Feedback 75 Meters and 175 Meters

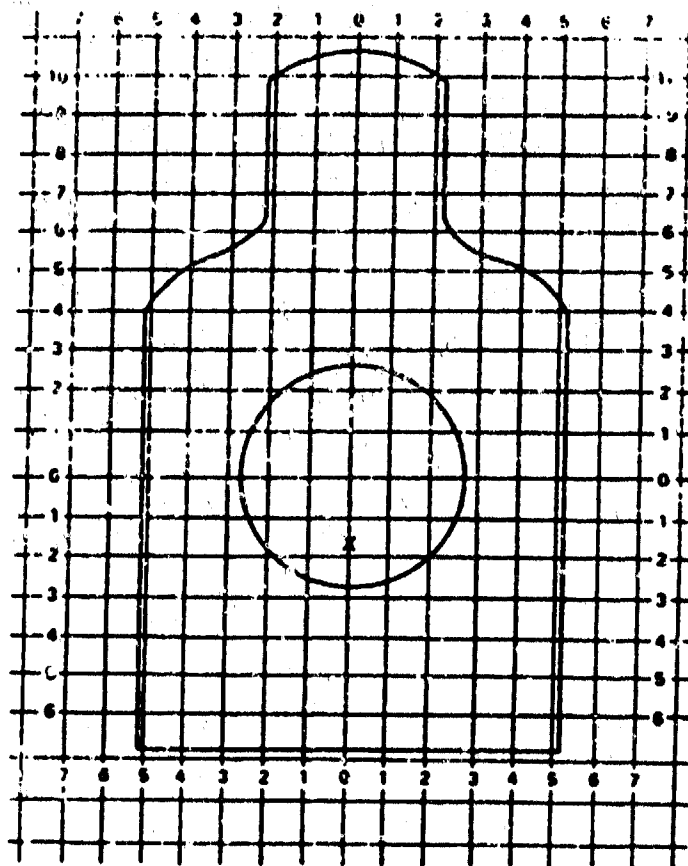


Foxhole Supported

(1st Shot Group-175 Meters)

Hit \_\_\_ Miss \_\_\_ No Fire \_\_\_  
Sights: Up \_\_\_ Down \_\_\_ Left \_\_\_ Right \_\_\_

PERIOD 6 Downrange Feedback 75 Meters and 175 Meters



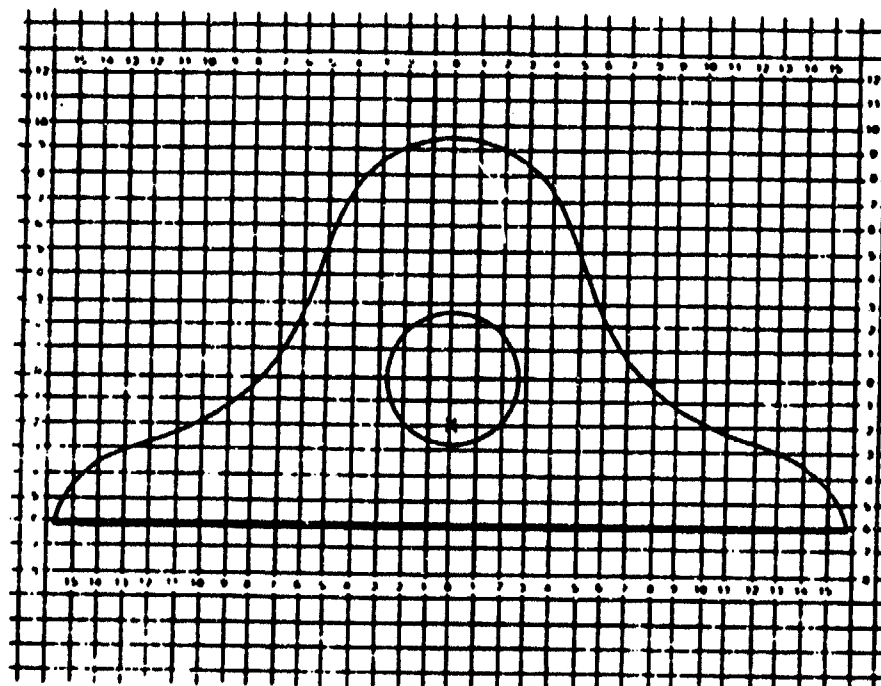
Foxhole Supported

(2nd Shot Group-175 Meters)

Hit  Miss  No Fire

Sights: Up  Down  Left  Right

PERIOD 6: Downrange Feedback 75 Meters and 175 Meters



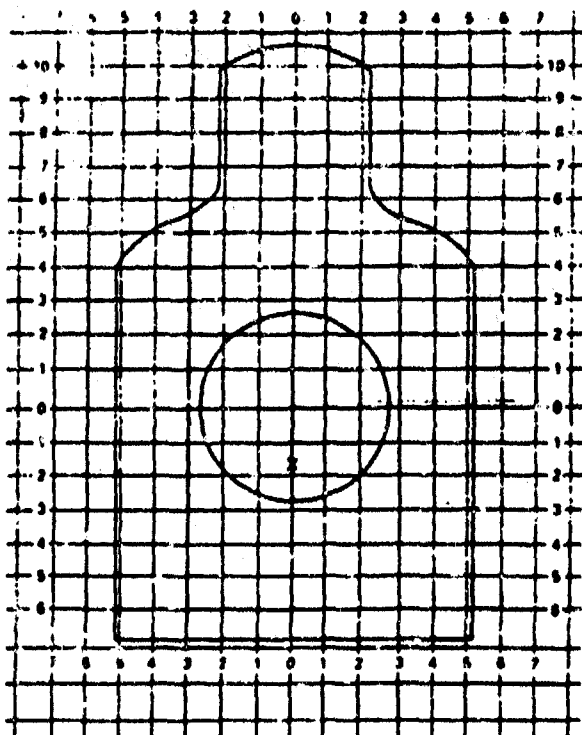
Prone Unsupported

(2nd Shot Group-75 Meters)

Hit        Miss        No Fire       

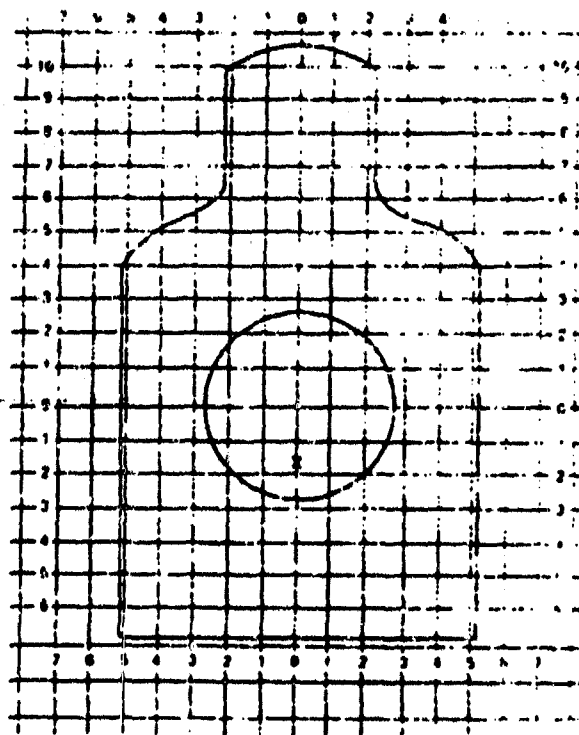
-NO SIGHT CHANGES-

PERIOD 6: Downrange Feedback 75 Meters and 175 Meters



(3rd Shot Group-175 Meters)

Hit      Miss      No Fire       
-NO SIGHT CHANGES-



(4th Shot Group-175 Meters)

Hit      Miss      No Fire       
-NO SIGHT CHANGES-

PERIOD 7: Single Targets and Target Detection

TABLE 1. FOXHOLE POSITION

RD	RANGE (M)	TIME (SEC)	HIT	MISS	NO FIRE
1	75	5			
2	175	10			
3	175	10			
4	75	5			
5	175	5			
6	175	5			
TOTAL					

TABLE 2. FOXHOLE POSITION

RD	RANGE (M)	TIME (SEC)	HIT	MISS	NO FIRE
1	75	5			
2	300	10			
3	175	5			
4	75	5			
5	300	10			
6	175	5			
TOTAL					

PERIOD 7: Single Targets and Target Detection

TABLE 3. FOXHOLE POSITION

RD	RANGE (M)	TIME (SEC)	HIT	MISS	NO FIRE
1	175	5			
2	175	5			
3	300	10			
4	175	5			
5	300	10			
6	175	5			
TOTAL					

TABLE 4. FOXHOLE POSITION

RD	RANGE (M)	TIME (SEC)	HIT	MISS	NO FIRE
1	175	5			
2	175	5			
3	75	10			
4	300	5			
5	175	5			
6	175	5			
TOTAL					

PERIOD 7: Single Targets and Target Detection

TABLE 5. PRONE POSITION

RD	RANGE (M)	TIME (SEC)	HIT	MISS	NO FIRE
1	75	5			
2	175	5			
3	175	5			
4	75	5			
5	175	5			
6	300	10			
TOTAL					

TABLE 6. PRONE POSITION

RD	RANGE (M)	TIME (SEC)	HIT	MISS	NO FIRE
1	175	5			
2	75	5			
3	300	10			
4	75	5			
5	300	10			
6	175	5			
TOTAL					

PERIOD 7: Single Targets and Target Detection

TABLE 7. PRONE POSITION

RD	RANGE (M)	TIME (SEC)	HIT	MISS	NO FIRE
1	300	10			
2	75	5			
3	175	5			
4	75	5			
5	175	5			
6	175	5			
TOTAL					

TABLE	HITS	MISSES	NO FIRE
1			
2			
3			
4			
5			
6			
7			
TOTAL			



PERIOD 2: Single and Multiple Targets

TABLE 1. FOXHOLE POSITION

RD	RANGE (M)	TIME (SEC)	HIT	MISS	NO FIRE
1	175	5			
2	75	10			
3	300				
4	75	3			
5	175	5			
6	175	6			
7	75				
8	175	5			
9	175	12			
10	300				
11	300	8			
12	175	6			
13	75				
14	75	3			
15	175	6			
16	75				
17	300	12			
18	175				
TOTAL					

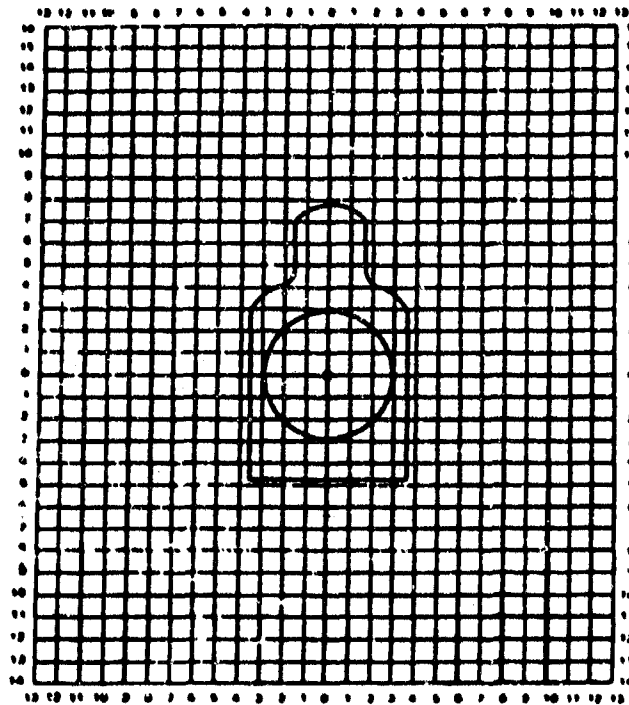
PERIOD 8: Single and Multiple Targets

TABLE 2. PRONE POSITION

RD	RANGE (M)	TIME (SEC)	HIT	MISS	NO FIRE
1	75	8			
2	175				
3	300	9			
4	175	6			
5	75	8			
6	175				
7	300	12			
8	175				
9	75	8			
10	175				
11	75	5			
12	300	12			
13	175				
14	75	10			
15	300				
16	175	6			
17	175	8			
18	75				
TOTAL					

TABLE	HITS	MISSSES	NO FIRE
1			
2			
TOTAL			

# PERIOD 9: Zero and Timed Fire



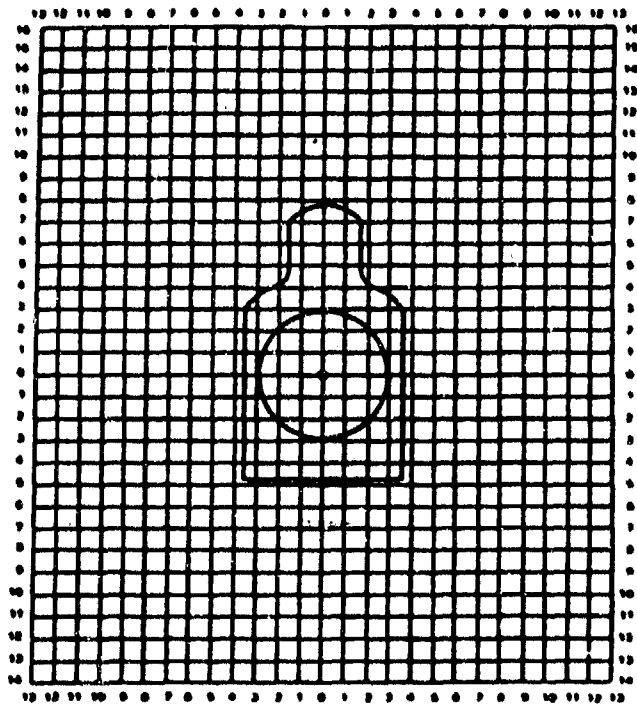
(1st Shot Group)

Up \_\_\_\_\_  
 Down \_\_\_\_\_  
 Left \_\_\_\_\_ Zeroed? Yes \_\_\_\_\_ No \_\_\_\_\_  
 Right \_\_\_\_\_

(2nd Shot Group)

Up \_\_\_\_\_  
 Down \_\_\_\_\_  
 Left \_\_\_\_\_ Zeroed? Yes \_\_\_\_\_ No \_\_\_\_\_  
 Right \_\_\_\_\_

# PERIOD 9: Zero and Timed Fire



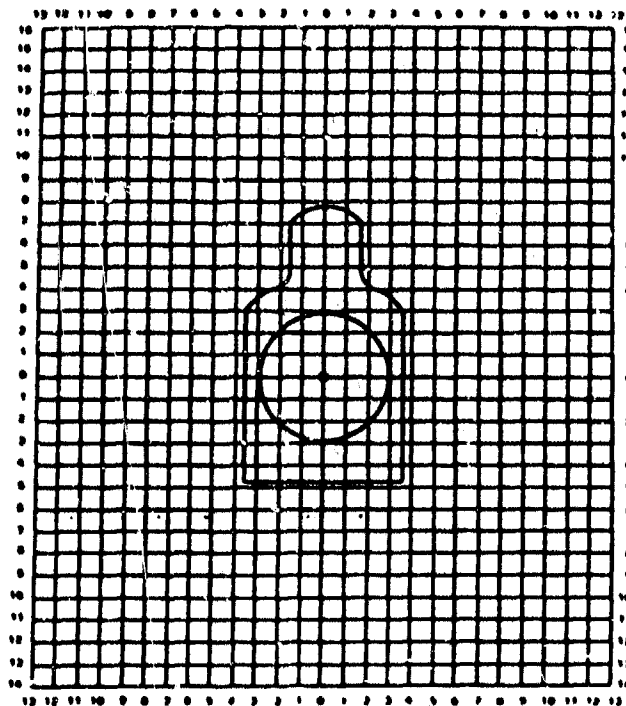
## (3rd Shot Group)

Up \_\_\_\_\_  
 Down \_\_\_\_\_  
 Left \_\_\_\_\_ Zeroed? Yes \_\_\_\_\_ No \_\_\_\_\_  
 Right \_\_\_\_\_

## (4th Shot Group)

Up \_\_\_\_\_  
 Down \_\_\_\_\_  
 Left \_\_\_\_\_ Zeroed? Yes \_\_\_\_\_ No \_\_\_\_\_  
 Right \_\_\_\_\_

# PERIOD 9: Zero and Timed Fire



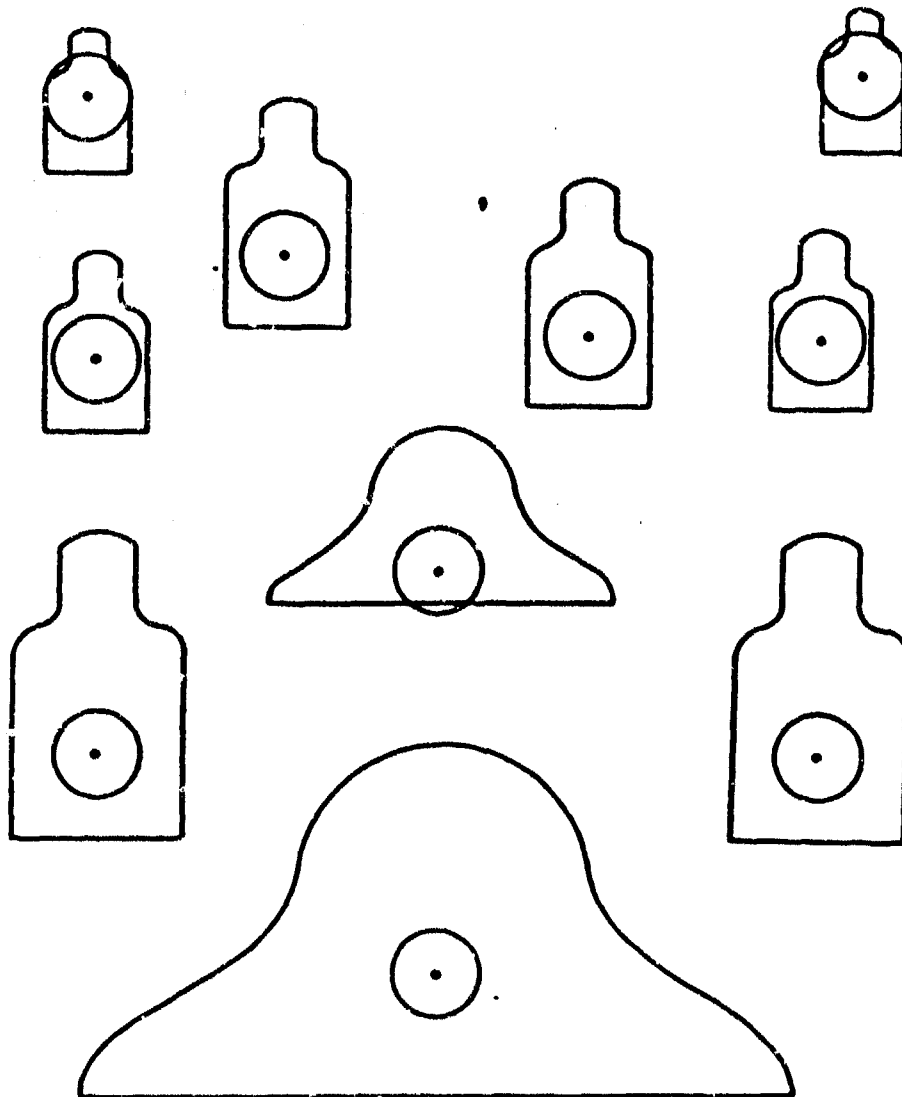
(5th Shot Group)

Up \_\_\_\_\_  
 Down \_\_\_\_\_  
 Left \_\_\_\_\_ Zeroed? Yes \_\_\_\_\_ No \_\_\_\_\_  
 Right \_\_\_\_\_

(6th Shot Group)

Up \_\_\_\_\_  
 Down \_\_\_\_\_  
 Left \_\_\_\_\_ Zeroed? Yes \_\_\_\_\_ No \_\_\_\_\_  
 Right \_\_\_\_\_

PERIOD 9: Zero and Timed Fire



PERIOD 9: Zero and Timed Fire

TABLE 1. SCALED SILHOUETTES  
FOXHOLE POSITION

RD	SILHOUETTE SIZE (RANGE)	HIT	MISS	NO FIRE
1	50			
1	100			
1	150			
1	150			
1	200			
1	200			
1	250			
1	250			
1	300			
1	300			
TOTAL				

PERIOD 9: Zero and Timed Fire

TABLE 2. SCALED SILHOUETTES  
PRONE POSITION

RD	SILHOUETTE SIZE (RANGE)	HIT	MISS	NO FIRE
1	50			
1	100			
1	150			
1	150			
1	200			
1	200			
1	250			
1	250			
1	300			
1	300			
TOTAL				

TABLE	HITS	MISSES	NO FIRE
1			
2			
TOTAL			



PERIOD 10: Practice Record Fire

Hits\_\_\_ Misses\_\_\_ No Fires\_\_\_ Alibis\_\_\_

PERIOD 11: Combat Firing and Record Fire

*Combat Firing*

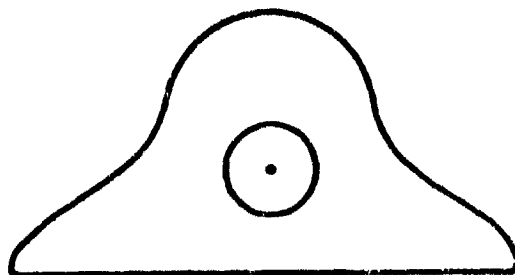
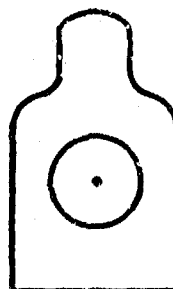
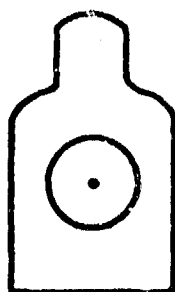
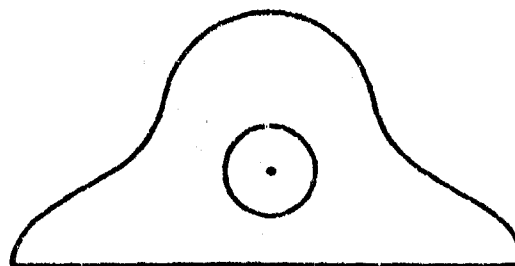
Hits\_\_\_ Misses\_\_\_ No Fires\_\_\_ Alibis\_\_\_

*Record Fire*

Hits\_\_\_ Misses\_\_\_ No Fires\_\_\_ Alibis\_\_\_

Rating: Expert (36-40) \_\_\_\_\_  
Sharpshooter (30-35) \_\_\_\_\_  
Marksman (23-29) \_\_\_\_\_  
Unqualified (22 or less) \_\_\_\_\_

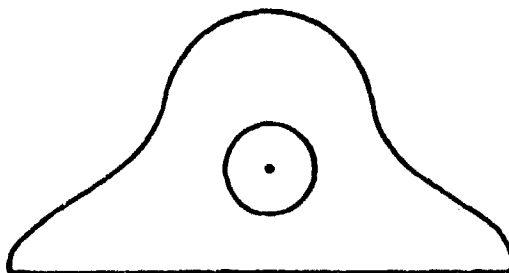
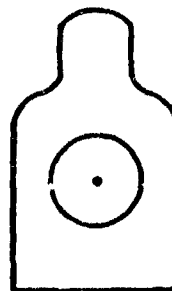
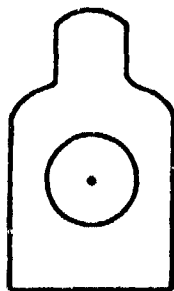
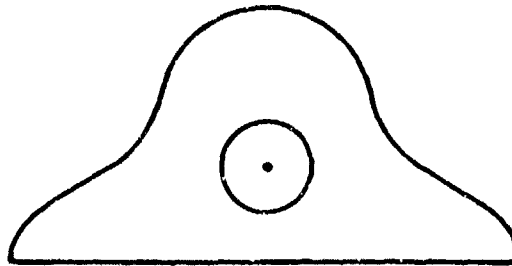
# PERIOD 12: Automatic Firing



## M60 Modified Prone or Foxhole Position

75 Meter: Hit\_\_\_ Miss\_\_\_ No Fire\_\_\_  
 175 Meter: Hit\_\_\_ Miss\_\_\_ No Fire\_\_\_  
 300 Meter: Hit\_\_\_ Miss\_\_\_ No Fire\_\_\_

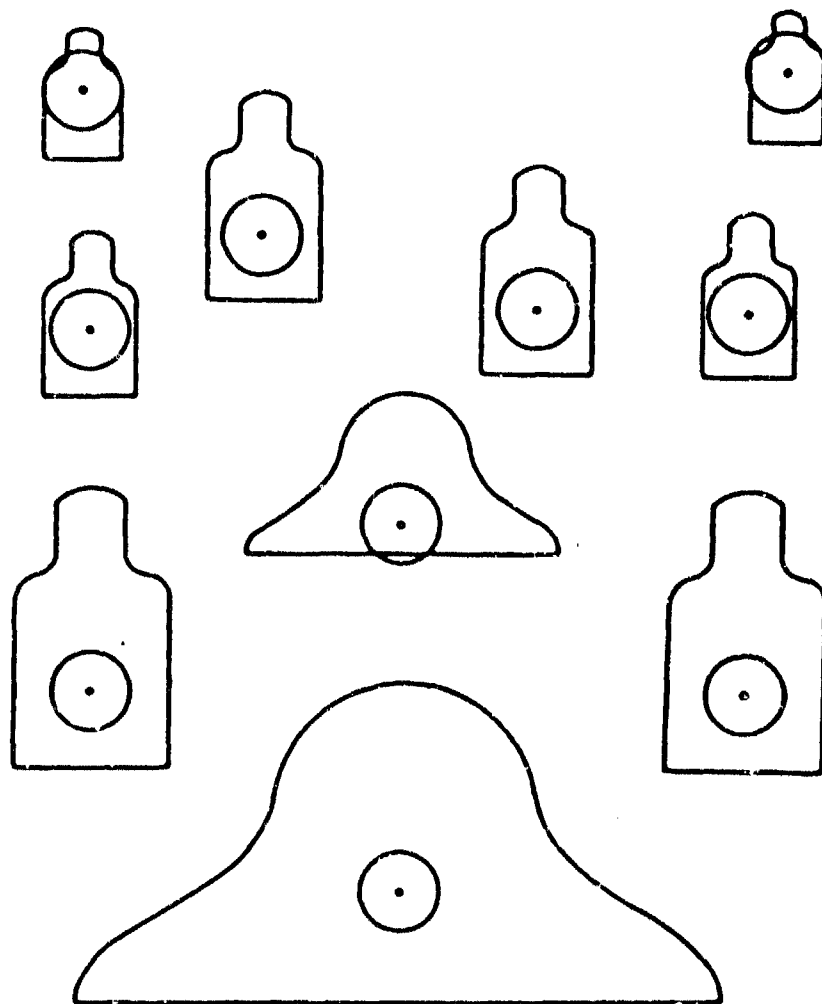
# PERIOD 12: Automatic Firing



## M60 Modified Prone or Foxhole Position

75 Meter:	Hit	___	Miss	___	No Fire	___
175 Meter:	Hit	___	Miss	___	No Fire	___
300 Meter:	Hit	___	Miss	___	No Fire	___

# PERIOD 13: Protective Mask Firing



## Prone Unsupported or Foxhole Supported

50 Meter:	Hit	Miss	No Fire
100 Meter:	Hit	Miss	No Fire
150 Meter:	Hit	Miss	No Fire
200 Meter:	Hit	Miss	No Fire
250 Meter:	Hit	Miss	No Fire
300 Meter:	Hit	Miss	No Fire

PERIOD 14: Night Firing

Hit \_\_\_\_ Miss \_\_\_\_

NOTES